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NICARAGUA—THE GATEWAY TO THE ATLANTIC

BY WILLIAM LAWRENCE MERRY

THE Republic of Nicaragua lies between Honduras and Salvador on the north and Costa Rica on the south. It has a coast line on the Atlantic ocean of 250 miles, and on the Pacific ocean of 185 miles. From ocean to ocean it is 200 miles wide on its northern boundary, and 120 miles wide on its southern boundary. The Republic extends from latitude 10° to 15° north. Its area is 49,000 square miles (about three times the area of Switzerland), and its estimated population 400,000 souls. Its eastern coast was first sighted by Columbus in 1503. It was first visited and explored by the Spanish military adventurer Gil Gonzales Davila in 1522. In 1821, the five Central American Republics, including Nicaragua, became independent of Spain, and formed a confederacy which was dissolved in 1839, since which they have been independent. The Republic derives its name from Nicaraô, a powerful native chief, found on the shores of the great lake by the Spanish discoverers, who called the lake Nicaraô-agua, from which easily came the abbreviation—Nicaragua.

From Cape Horn to the Arctic ocean a monntain chain rears its peaks between the oceans, under various names, but always the same longest of all mountain systems in the world. But in Nicaragua there is a freak of nature. The mountain range is broken in continuity and decreased in elevation. Two great lakes, Nicaragua and Managua, depress the continental backbone and furnish the lowest level between the Atlantic and Pacific oceans, from Cape Horn to the Arctic ocean, 153 feet above mean sea level. The next lowest is at Panama, 295 feet, and the third at Tehauntepec, 855 feet. There are also two low summit levels below the Panama isthmus, but they have little to recommend them for canalization. They are known as the *Atrato-Napipi* route with *778 feet* elevation, and the *Atrato-Tuyra* with *800 feet* elevation, both being partly on the line of the great river Atrato. Lake Nicaragua is 110 miles long and 40 miles wide. Standing on its western shore, its waves beat at the traveler's feet with the cadence of an ocean surf, and the opposite shore is out of sight. It is from 12 to 240 feet deep, and free from hidden dangers, except that its waters are infested with sharks, having probably come from the Caribbean up the River San Juan, and gradually become habituated to the new environment as in the case of the sharks in the lakes of the Fejee Islands.

Map of Nicaragua Canal

Lake Managua is 30 miles long and 15 wide, of an irregular shape and 24 feet higher than Lake Nicaragua, with which it is connected in high water by the Tipitapa river. It is proposed to unite these two lakes by a canal with one lock to overcome the difference in elevation. This work is included in the Canal Company's contract with the Government of Nicaragua.

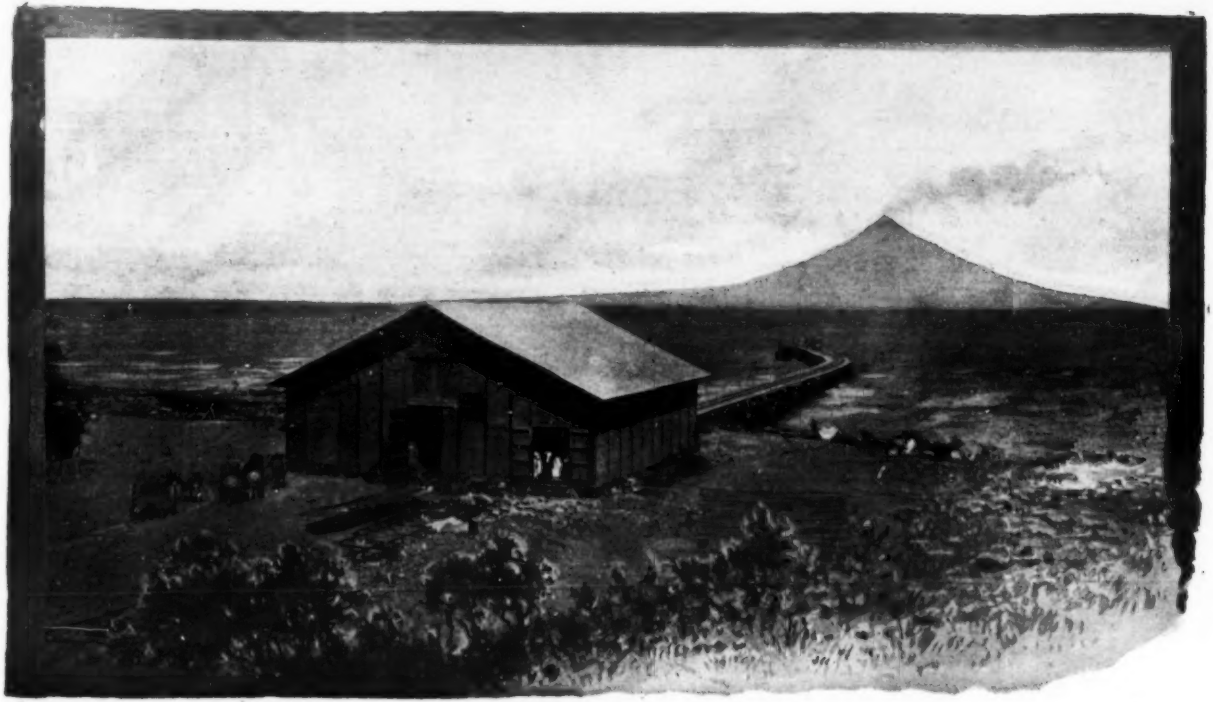
These two great lakes and the consequent low summit level between the oceans give to Nicaragua an especially fine climate—it may be called a marine tropical climate. The tradewinds from the Atlantic blow, with rare exceptions, across the Republic, minimizing malarial influences and lowering the thermometer, so that at night one needs a blanket to sleep comfortably in the vicinity of the lakes.

Among the many advantages possessed by this favored land, there is one which far exceeds in value her resources of mine, field and forest. Standing midway between the northern and southern extremities of the continents, the barrier there presented to direct communication between the two great oceans and the countries bordering upon them is, as before stated, the lowest that exists anywhere on the American continent. The import of this great fact to the commercial world remains to be considered. We merely remark here that Nicaragua is *on the highway of the worlds future commerce*, and, in a military point of view, far exceeds Gibraltar in importance. It is, in fact, *the key between the Atlantic and the Pacific—the path of empire is through its gateway for the nation that holds the key!*

Since the days of Walker, the Filibuster, in 1856, Nicaragua has enjoyed peace and a good government. It is almost out of debt, and generally has a small annual surplus, which is devoted to building railways operated by the Government for the benefit of the people, instead of charging all the traffic will bear. The Republic is divided into nine Departments, each governed by a Prefect. Otherwise the form of government is much like that of the United States. The present President, Doctor Roberto Sacasa, is a wise and patriotic Executive, commanding the respect of all who know him.

There are several small cities in the Republic. *Leon*, with 35,000 inhabitants; *Granada*, with 15,000; *Chinandoga*, with 12,000; *Managua*, the Capital city, with 10,000; *Maraya*, with 18,000; *Rivas*, four miles from the canal, Western Division, with 8,000; *Matagulpa*, with 9,000, and *La Libertad* with 5,000. Besides this there are several smaller towns, San *Juan del Sur*, San *Juan del Norte*, *Blewfields Carnito*, and others. There are few good roads in the country, and transportation is slow and expensive, except, as in California, by water. Two Government railways from Corinte South are in operation, and several charters have been granted for others; one is being constructed by an English company, from San Ubaldo, on the Great Lake to the Rama river, with deep water communication 30 miles to the Atlantic coast. When this railway has been completed, Nicaragua will have an inter-oceanic highway, independent of the Canal. The majority of the population is settled on the Western coast of the Republic. The industry of banana and cocoanut growing has been so increased on the Atlantic coast that a regular line of weekly steamers runs between New Orleans and the so-called Mosquito coast of Nicaragua. This coast is generally low, heavily timbered, and has a large rainfall. Between the Atlantic coast and Lake Nicaragua there are rich mineral districts with mines of gold and silver already being worked, two of which are listed on the London stock exchange. This section of the Republic is also largely devoted to cattle-raising.

The availability of the Nicaragua route as an inter-oceanic highway was indicated as early as 1550 by the



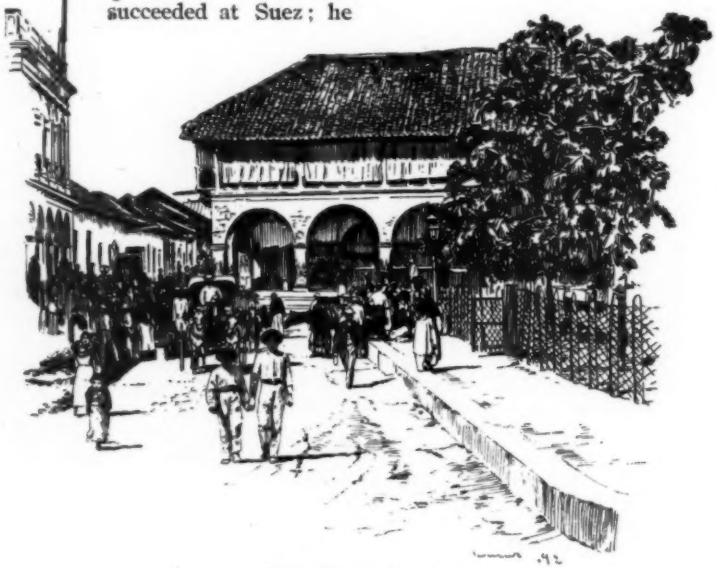
Lake Nicaragau. Ometepe Island in the distance

Spanish explorer Antonio Galvao. Since 1825 the subject has been repeatedly presented to the Governments of Nicaragua and the United States. In 1844 Don Francisco Castellon, a citizen of Nicaragua visited France, and the project was called to the attention of Prince Louis Napoleon, who published a pamphlet on the subject, but no active efforts followed. In 1849 Cornelius Vanderbilt and associates obtained a concession for a ship canal, and a survey was made for them by Colonel Childs, of Philadelphia, which was pronounced feasible by United States Government Engineers. Mr. Vanderbilt failed, however, to enlist capital enough to undertake the work, and permitted the concession to lapse. I have heard it stated that English capitalists objected for the reason that Child's survey provided for a canal with only 20 feet water, which would be mostly to the advantage of American coasting trade, and not deep enough for English ships in the foreign trade. The present surveys provide for the largest ships that navigate the ocean, 30 feet depth, with locks 650 feet long and 80 feet wide, with facilities for the construction of still larger locks if they are needed.

In 1852, a series of explorations were commenced covering the whole isthmus, partly on private account, but mostly under instructions of the United States Government. In 1872–73, complete surveys of the Panama and Nicaragua routes were made under command of Commander Lull, United States Navy, with Mr. A. G. Menocal as the Chief Engineer. The result of these surveys was the condemnation of the Panama route and the approval of the Nicaragua route for a lock canal, using the great lake as its summit level. The survey demonstrated the possibility of a lock canal at Panama with 14 feet more elevation than at Nicaragua, and at somewhat greater cost. It entirely condemned the Panama route for a sea-level canal, as afterward attempted by the French. General Grant, himself a civil engineer of no mean pretensions, wrote in the *North American Review* of February, 1881, that, if practicable at all, the Panama canal would cost over $400,000,000. Over three-quarters of that amount has been sunk in the attempt and less than one-quarter of the necessary excavation accomplished. General Grant is also on record as asserting that every dollar put into the Panama canal would be lost to the investors.

In May, 1879, Lesseps called together the International Canal Congress at Paris for the assumed purpose of consultation as to the route to be adopted. Our Government appointed Rear Admiral Daniel Ammen, United States Navy, and Mr. A. G. Menocal, C. E., as our delegates. It appearing that the Congress was controlled in the interest of parties who had acquired a concession for the Panama route, and that a fair discussion and vote was not wanted, our delegates declined to vote. It subsequently appeared that a syndicate of Frenchmen, including Count de Lesseps, had made prior application to the Nicaragua government for a canal concession, and failing there by one vote only, had taken up the Wyre concession from the Colombian Government for a canal at Panama. Had Lesseps succeeded in obtaining the Nicaragua concession, we have every reason to believe the Nicaragua canal would have been opened in 1888, although he might have developed there the same extravagance and poor judgment which characterized the work at Panama, but one-third of what he expended would have opened the Nicaragua canal to commerce. There are those, and many of his countrymen among them, that charge De Lesseps with dishonesty, but I think they do so unjustly. He had built a sea-level canal at Suez, encountering only political obstacles, and he thought he could do the same at Panama, under entirely different conditions of rainfall, drainage and

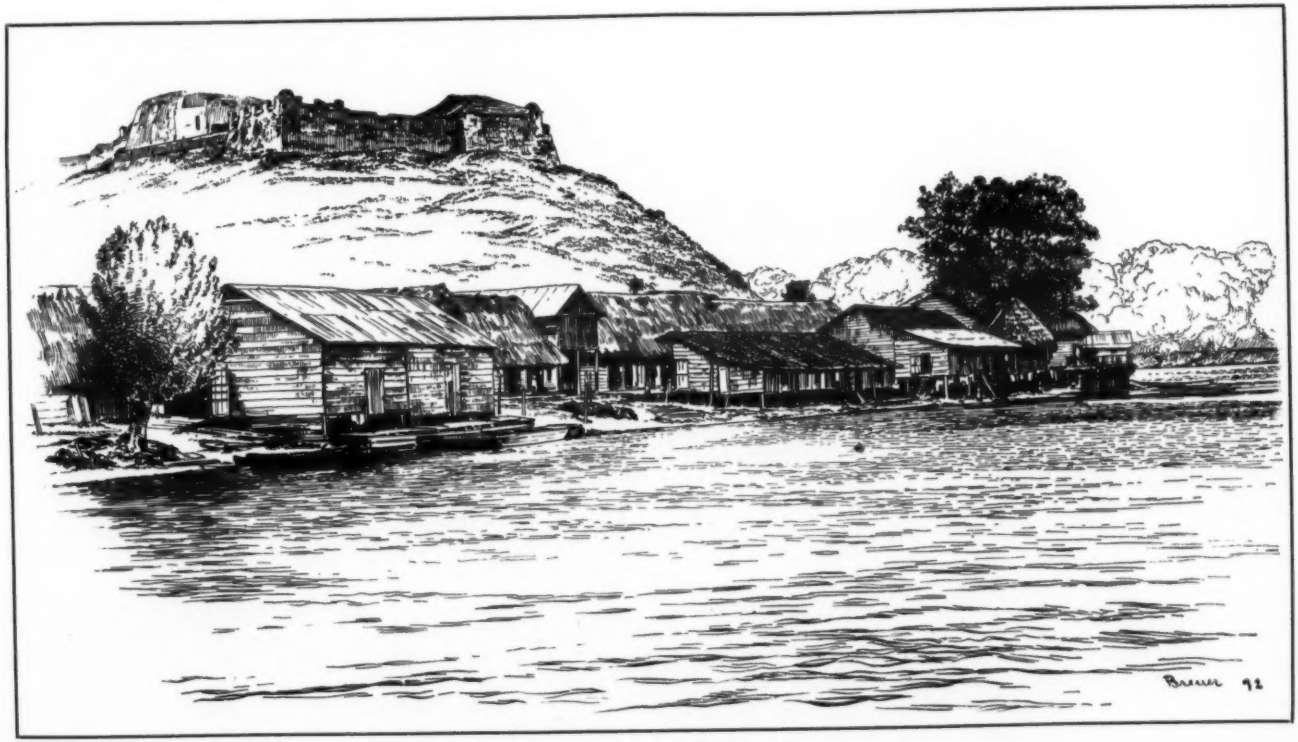
topography. He was vain and ambitious. His engineers ignored the maxim of Davy Crockett, "*Be sure you're right, then go ahead!*" They went ahead *first*, and found out they were wrong *afterwards*. They destroyed the route for a lock canal before they gave up the sea-level canal theory. The facility with which Lesseps raised money was a marvel to the financial world. He had the full confidence of the middle classes of France, who confided their earnings to him without a question. "He had succeeded at Suez; he would succeed at Panama." Alas for the fallacy of human judgment when it is not based on the solid foundation of truth and soberness!



Market Scene at Granada

In 1880 a Provisional Inter-Oceanic Canal Society was formed at New York, including Gen. Grant, Gen. McClellan, Admiral Ammen, and others. In May, 1880, the Society obtained a Canal Concession from the Government of Nicaragua, and in December, 1881, a bill was introduced in Congress by Senator Miller, of California, for an inter-oceanic canal at Nicaragua, under control of the United States Government. This bill was bitterly contested by the agents of the Panama Canal Company, and by Captain Eads with his ship-railway project. It passed the Senate, and having been taken up out of order in the house, a procedure rendered necessary owing to the approaching adjournment of Congress, it failed of the necessary two-thirds vote, although it had a decided majority in the House of Representatives.

Meanwhile the administration of President Arthur was secretly negotiating a canal treaty with Nicaragua for construction on Government account, with a joint sovereignty and the right to fortify the termini. This treaty was ratified by the Senate of Nicaragua, but was withdrawn from the United States Senate by President Cleveland, who had meanwhile attained office. His assigned reason was



Castillo, looking up the River San Juan

a fear of foreign complications. The friends of the enterprise were not disheartened—the demand for an inter-oceanic canal was increasing, and the facility of construction at Nicaragua had been demonstrated by repeated surveys with instruments of precision.

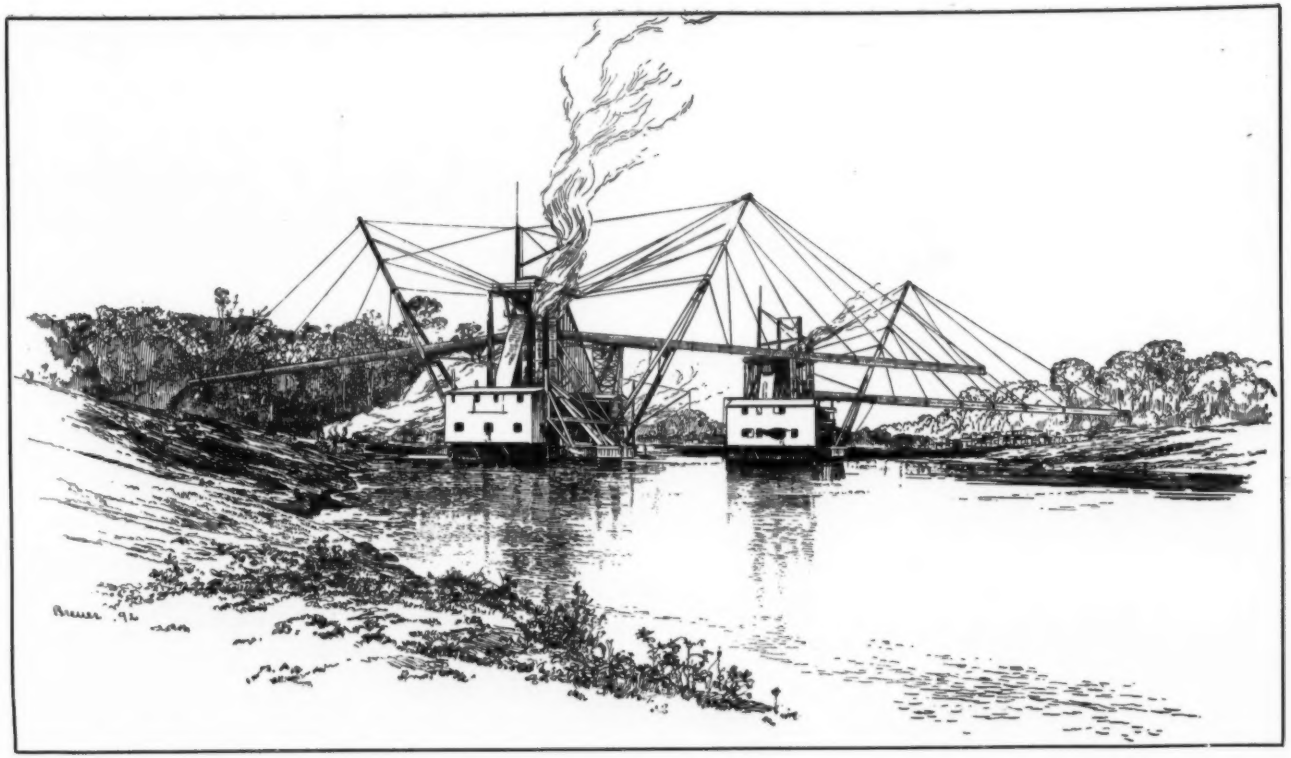
In 1886 *The Nicaragua Canal Association* was formed, and another concession was obtained from Nicaragua and Costa Rica, the former one having lapsed, a payment of $100,000 was made to the Government of Nicaragua as an evidence of good faith, and in 1887 surveying was again resumed under auspices of the new association, with the view of developing every possible improvement, prior to construction. The labors of this last survey may be illustrated by the fact that although the canal in excavation is only 26⅞ miles, not less than 4,000 miles of survey were made including, cross sections, embankments, locks, railroads, etc.

Borings were made all along the line to the bottom of the proposed canal, and samples are placed at the office of the company at New York, for the inspection of engineers and contractors. The Maritime Canal Company of Nicaragua had been organized meanwhile, and had acquired the rights of the Canal Association, the concession being for two periods of ninety-nine years each. The efforts of this last company to enlist private capital requiring the aid of influential capitalists and business men, the Nicaragua Canal Construction Company, of which the Hon. Warner Miller is President, was organized, and a contract made with it to construct the canal, payable in stock and bonds. Allusion having been made to this company as an imitator of the *Credit Mobilier* and *Contract and Finance Company*, it is proper to say that the contract is a matter of record, on a fair basis, and that not a director in the Construction Company is on the Directory of the Canal Company. The stock of both companies is open to the public at this time, as a legitimate investment. The Construction Company has devoted itself to interesting private capital only, and has thus far expended about $5,000,000 with economy and decided success.

In January, 1888, the bill to incorporate the Maritime Canal Company of Nicaragua was introduced in the forty-ninth Congress, and passed that body. This bill concedes no privileges except the moral support of incorporation by the Government of the United States. On the 10th of January, 1891, a bill was introduced in the United States Senate by Senator Sherman, empowering the Government to guarantee $100,000,000 four per cent bonds to be issued as construction proceeds, under investigation of five engineers appointed by the President, the company to place *in escrow* with the Secretary of the Treasury seven-tenths of its capital stock as security, of which the Government has the option of purchase (all or any part thereof) at any time prior to the maturity of the bonds. The Government also places six directors in the board to vote the majority of the stock held as security.

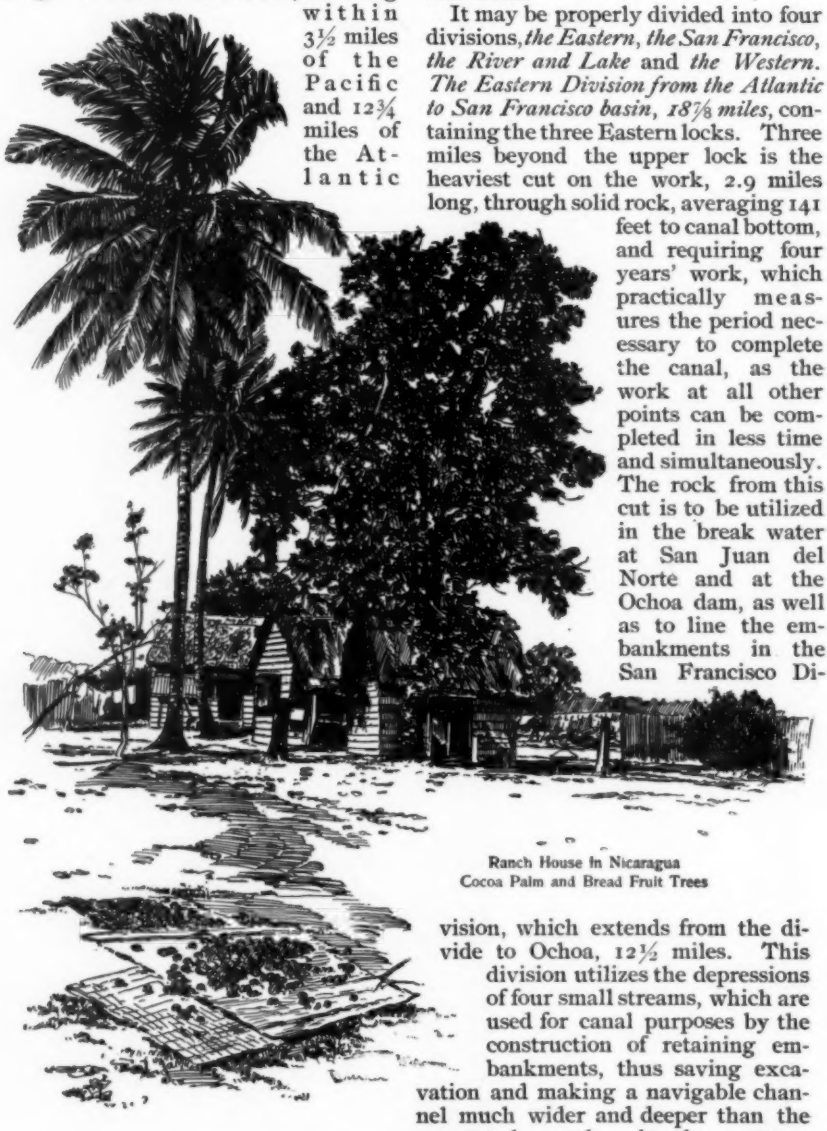
The introduction of this bill was not at the instance of the promoters of the enterprise, but originated in the Senate Committee, as stated in its report. In fact, the Canal Company are at the mercy of Congress, for the charter provides that *Congress shall, at all times, have the power to alter, amend, or repeal this Act when, in its judgment, the public good may require.* The bill was withdrawn late in the session, and has again been introduced into the present Congress, with the urgent recommendation of President Harrison that it shall be passed. His reasons are well known to the public through his message to Congress in December last. Turning from this somewhat tedious history of delays procured largely by interests adverse to the public welfare, a brief description of the projected canal is in order.

The Nicaragua canal may be briefly described as a summit level of naviga



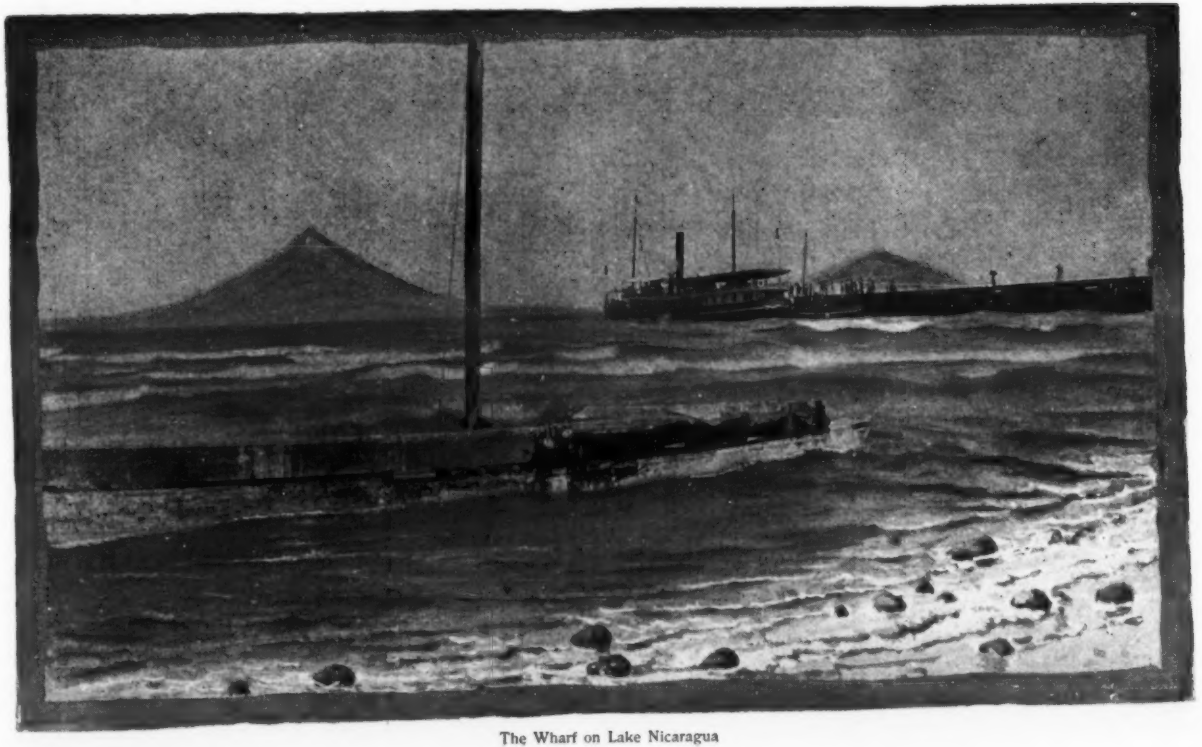
Dredgers at Work on the Canal

tion in fresh water, 153¼ miles long, 110 feet above the sea, reaching within 3½ miles of the Pacific and 12¾ miles of the Atlantic ocean. The total length of navigation is 169½ miles; there will be three lift locks at each end of the summit level.



Ranch House in Nicaragua
Cocoa Palm and Bread Fruit Trees

It may be properly divided into four divisions, *the Eastern, the San Francisco, the River and Lake* and *the Western. The Eastern Division from the Atlantic to San Francisco basin, 18⅞ miles,* containing the three Eastern locks. Three miles beyond the upper lock is the heaviest cut on the work, 2.9 miles long, through solid rock, averaging 141 feet to canal bottom, and requiring four years' work, which practically measures the period necessary to complete the canal, as the work at all other points can be completed in less time and simultaneously. The rock from this cut is to be utilized in the break water at San Juan del Norte and at the Ochoa dam, as well as to line the embankments in the San Francisco Division, which extends from the divide to Ochoa, 12½ miles. This division utilizes the depressions of four small streams, which are used for canal purposes by the construction of retaining embankments, thus saving excavation and making a navigable channel much wider and deeper than the excavated canal. At the western end of this division we come to the Ochoa dam across the River San



The Wharf on Lake Nicaragua

Juan, 1900 feet long and 70 feet maximum height, raising the waters of the river 56 feet to the level of the lake, less four feet, which allows about three-fourths inch per mile for a slow current from the lake over the dam, probably three-quarters of a mile an hour.

Lake and River Division, 121.04 miles. The River San Juan discharges as high as 20,000 cubic feet water per second. It is a large river of clear, fresh water, from 200 to 400 yards wide—a larger stream than the Sacramento in ordinary stages. By the Ochoa dam, slack-water navigation is obtained to the lake with 4½ feet excavation for the 24 miles nearest the lake. The width of this inundated river navigation will vary with the conformation of the land, from the present width to half a mile or more. Some of the bends must be cut off to give a radius easy for navigation of the largest ships. There will be ample space on all this division for ships to pass each other safely at a speed of eight miles per hour, while in the lake full speed can be maintained. Dredging in soft mud will be necessary at the eastern end of the lake for 14 miles, averaging about ten feet. The lake navigation is 56½ miles. Dredging will be necessary for 1400 feet at its western shore.

Western Division—Lake to Pacific Ocean, 17.04 miles. Of this distance, 11½ miles will be in excavation, and 5½ miles in the Tola basin, a depression of 4,000 acres, which is flooded 30 to 70 feet by a retaining dam 70 feet high and 1800 feet long. The use of depressions on the canal line is only possible on a surface canal, and has been made use of to great advantage by the engineers on the Nicaragua surveys.

The Port of Brito on the Pacific has to be created, but this can be done without risk and at moderate cost. It somewhat resembles Port Harford, except that the landing is on low ground. A breakwater 900 feet long must be extended from the headland, and a shorter one from and perpendicular to the beach, enclosing a small harbor of about 100 acres, which with the enlarged portion of the canal contiguous thereto, will make all the harbor needed, especially as the splendid harbor in the Tola basin will be only 3½ miles distant, and will be largely preferred, being fresh water.

The port of San Juan del Norte, at the Atlantic terminus, was a fine harbor 35 years ago, but has been damaged by silt deposit from the Rio San Juan, and by the drifting sands of the ocean beach. The plans for the restoration of this harbor involve a cost of about $2,000,000. A breakwater about 3,000 feet long has to be constructed to protect the entrance from the drifting sands outside, and the channel to leeward dredged to a depth of 30 feet. Eleven hundred feet of this jetty have been already constructed, and there is now 15 feet water in the channel. The success which has attended this work already is an assurance of success. The restoration of this port was the most difficult problem of the canal. There is nothing else in the work difficult of execution; the problem is merely one of finances. The port of *San Juan del Norte* is often miscalled *Greytown*, but this name is distasteful to Nicaragua, having been first used by the English when the British Government seized the port, and placed there Sir George Grey as military Governor. The eastern seaboard of Nicaragua was evacuated by the British on the ratification of the Clayton-Bulwer treaty, some features of which are still a contention between our Government and that of Great Britain.

The capacity of the canal will be 20,440,000 tons, which can be doubled by duplicating the locks. The Suez canal passed in 1890 about 9,000,000, producing a revenue of 19 per cent. The capital stock is now worth 500 per cent. The Nicaragua canal will open with an assured tonnage of 8,730,000 tons, which will rapidly

Showing Dredgers from the Land. Embankment thrown up and Railroad

increase, producing a revenue of $16,250,000 per annum. The cost of maintenance may be safely placed at $1,500,000 per annum. The enterprise has every indication of being good for over 14 per cent on $100,000,000, the estimated cost. The time of passing through the canal is placed at 28 hours, including lockages.

of bankers' commissions and interest account.

The English Board exceeded this six hundred thousand dollars, a remarkable concurrence, considering different units of cost. The American Board of Supervising Engineers make a grand total of $87,799,570, and conclude their report with the remark that the enterprise is full of promise.

Native Houses on the San Juan

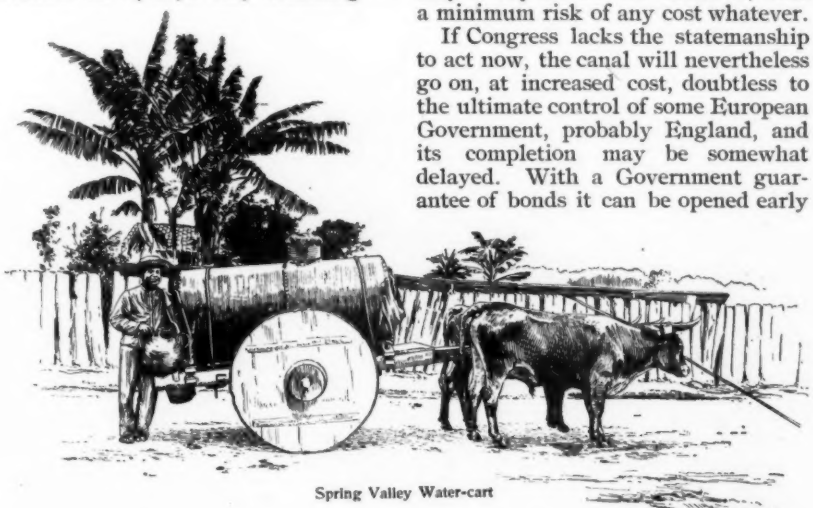
The cost of the work has been very carefully estimated by Engineer Menocal, and also by two Boards of Engineers, one in the United States and one in England. Dredging is calculated at 20 to 30 cents per cubic yard. Earth excavation at 40 to 50 cents. Rock excavation at $1.25 to $1.50. Sub-aqueous rock excavation at $5. The work thus far done has been under the estimates. Menocal makes a total cost of $65,084,176, exclusive

If the company can negotiate its securities at par, we may safely assume the total cost at less than $100,000,000. This can be done only by a Government guarantee of bonds. If securities have to be discounted, the cost will be greatly increased, probably 50 per cent. The Suez canal cost $94,000,000, and its bonds first sold at 60 per cent only.

The effect of this beneficent work upon the welfare and progress of the

Pacific coast is not a matter of doubt. We are suffering acutely the want of cheap transportation. The canal is a full and final solution of the question, and will terminate our arrested development.

Water transportation is the cheapest known to commerce—one-fifth to one-sixth cheaper than railway carriage. It is no trifling advantage to strike off 10,753 miles between New York and San Francisco—nearly one-half the earth's circumference. New York in 20 days, Liverpool in 28 days and New Orleans in 14 days easy steaming—

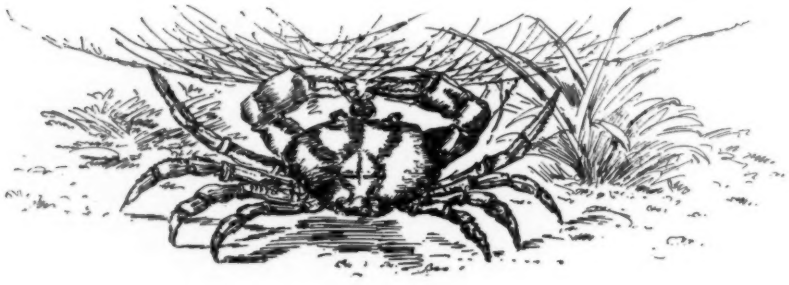


Spring Valley Water-cart

that is what the canal means for our producers and merchants! And this at a cost of one-third of a cent per pound or even one fourth of a cent, including toll, and without breaking bulk! Refrigerator steamers will land the products of our orchards and farms in Northern Europe when that market is bare of fruits and vegetables, and over-production will be an impossibility. Every acre of land will be doubled in value by the canal within a few years after its completion. Space forbids an extended discussion of its political importance to our country. Our greatest statesmen of all parties have recognized its value in this respect, and Grant has written: "*I recommend to my countrymen an American canal under American control.*" The illustrious names of Clay, Grant, Arthur, Blaine, Harrison, Sherman, Morgan, Evarts, Edmunds and many others are on record in favor of construction under the control of the United States Government. At this time, circumstances facilitate this policy; and should the occasion not be availed of, it may cost the Republic blood and treasure to obtain what we may to-day have if we desire it, with a minimum risk of any cost whatever.

If Congress lacks the statemanship to act now, the canal will nevertheless go on, at increased cost, doubtless to the ultimate control of some European Government, probably England, and its completion may be somewhat delayed. With a Government guarantee of bonds it can be opened early in 1897. If dependent on private resources, probably two years longer may elapse before the Gateway to the Atlantic is open to us! One word more for Nicaragua! Within five years from the opening of the canal the commerce of that Republic will pay its cost of maintenance. The enterprise is a fit conclusion to the great progress of the expiring century, already so full of history and advancement of the human race. It is the last great inter-oceanic highway to be opened, and the names connected

therewith will go down the ages with honor. Our country and the world demand it, and the world goes forward at this age—progress is the watchword of civilization! For this I have labored in my humble capacity for thirteen years! When the first American steamship passes through the Nicaragua canal, I hope she may hail from San Francisco, and when I see the flag of our country at the peak of an ocean steamship on Lake Nicaragua, I shall reverently paraphrase the devout Simeon of nineteen centuries ago: *Lord, now lettest Thou thy servant depart in peace, for mine eyes have seen the salvation of the Pacific coast and the glory of the Great Republic!* Welcome the day! It cannot come too soon!



SUNSET

BY ROSE HARTWICK THORPE

From his high throne the mighty Ruler of the days,
Bends down and downward to the fond embrace
Of Ocean's arms. Upon her bosom lays
The glory of his glad, enraptured face,
And flushes all her being with his gaze.

THE HAIRY MEN OF JAPAN

BY HELEN E. GREGORY-FLESHER, A. M.

THE Ainos or hairy men of Japan were first brought prominently to the attention of the scientific world by Prof. Albert S. Bickmore of the American Museum of Natural History, Central Park, New York, who was the first scientist to thoroughly investigate their ways and customs and to visit their towns and villages.

So close a veil of mystery enshrouds this strange race, whose fate it is to live despised in the land where once they reigned supreme, that the only native account of their origin is a half forgotten myth.

The Ainos have been considered by some ethnologists to be the aborigines of Japan. They have no history, few traditions, no written characters, can count with difficulty to a thousand, are densely ignorant and utterly uncivilized, yet are upright, honest, gentle and singularly truthful. At one time they overran the Kuriles, Yezo and Hondo, the main islands of the Japanese archipelago; now they are confined to Yezo alone, the most northerly of the group which forms the Mikado's empire.

This island, sometimes incorrectly called Yesso, lies half the year under ice and snow. A glance at the map of Asia will reveal the fact that it lies opposite to and not very distant from the coast of Siberia. It is separated from Hondo by the Strait of Tsugara, which is remarkable for its great depth. Traces of their former occupancy of Hondo are to be found in many geographical names. Noto, for instance, is a corruption of an Aino word meaning promontory. The Tonegawa river, which runs through Tokyo, derives its name from 'tanne,' the Aino for long. Now the Ainos live in their frost bound island forgotten and unknown; ekeing out a miserable existence fishing and hunting, and like our American Indians, gradually melting away before the light of civilization like snow before the sun.

Who are these people? And from whence did they come? Scientists say that Japan was inhabited by some unknown people before the time of the Ainos. But they were the only race found there at the dawn of history and the records go back no farther.

Tradition would seem to point to an Asian origin: their own legend or myth is briefly as follows:

Kamui, a prince of Asia, fell violently in love with his own daughter. As a punishment for their wickedness the whole body of the young princess became thickly covered with hair. In terror she fled to the sea-shore where she found a large boat occupied only by a great black dog. She embarked in it with the dog for sole companion and for many months sailed the sea. At last she landed in a mountainous

An Old Aino

country (Japan) and gave birth to a son and a daughter. The descendants of these children married, some among themselves and others among the bears of the mountains. The children of the bears were brave and skillful hunters and withdrew further and further into the inaccessible mountains where they yet live and direct the affairs of men.

Concerning their real origin there are many and various suppositions. Some authorities derive 'Aino' from 'Inu,' a dog, while others think it a combination of the words Ai-no-ko, 'offspring of the middle,' that is a dog and a woman. Both in reference, of course, to their reputed origin of which they themselves are very proud, while the Japanese despise them both for that and their extraordinary hairiness. To many travelers they are known as the 'hairy Kuriles.'

One writer speaks of them as the 'hairiest race in the whole world.' But they hardly seem to deserve that epithet as many Europeans are quite as thickly covered with hair.

The Japanese, being an unusually smooth-skinned people, and wearing neither beard nor moustache, have exaggerated the stories concerning the Ainos. Those who declare the Ainos to be the aborigines of Japan, the forefathers of the present Japanese race in whose veins flow a strain of Aino blood, have adduced some very striking arguments in support of this theory. Every one who has visited Japan has noticed the two types seen everywhere. The slender frame and small features, slanting eyes and eyebrows of the aristocratic families and the coarse build and large fat face found among the humbler classes.

The 'pudding faced' type, these scholars assert, are mixed Aino and Japanese blood. The aristocratic type, rendered familiar to us by Japanese artists who love to depict and exaggerate their characteristics (the slanting eyes and delicate features), is said to be the pure unmixed Japanese. Other arguments are drawn from relics of the Stone Age. These relics and household utensils, are exactly the same as the utensils and weapons found in use among the Ainos to-day.

Ancient Japanese is said to resemble the Aino language as spoken at present as much as it does modern Japanese.

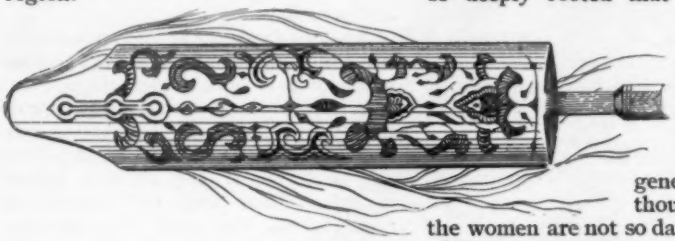
Whatever may be thought of this theory, it is noticeable that at one time the Japanese wore hair on the face. All pictures of the ancient nobles represent them with full beard and moustaches; the gods also are pictured not only with these but with abundant flowing locks.

The theory which appears to present the fewest contradictions is that the Ainos, crossing from northern Asia, Siberia probably, gradually pushed southward until they occupied all Hondo.

A legend of about the same antiquity as the Aino dog myth, would seem to indicate that the Japanese, who belonged to a more southern race, landed, or as their own quaint phrase expresses it, "The Divine Ancestors descended from Heaven" upon Kiushiu about the same time as the Ainos arrived in the north. The Japanese established their capital at Kyoto and, conquering the Ainos, drove them further and further northward until the latter crossed the strait of Tsugara, and to-day Yezo is all that is left to the people who at one time possessed the greater part of the whole kingdom.

In regard to the two distinct types among the Japanese, the assertion that the 'pudding face' shows an admixture of Aino blood has been stoutly denied and it is confidently affirmed that the half breeds seldom live and never in any case have descendants after the fourth or fifth generation and that this difference among the Japanese is accounted for by the fact that though both came originally from Korea, there were two tides of immigration, first the coarser, rougher settlers, then the more aristocratic. It has been discovered that the Aino and

Altai dialects much resemble each other which would seem to prove that the former originally came from that region.



An Aino Shuttle

This seems to be the most thoroughly satisfactory account of both races. Other ideas that have been advanced are that the Ainos and Esquimaux are identical and that the Japanese were originally Hindoo or perhaps Javanese. A strong resemblance has been traced between them and the American Indians and it has been surmised that the latter were Ainos who crossed to this continent by way of the Aleutian Islands.

One gentleman, after much laborious and pains-taking research, has discovered that the Ainos are 'the ten lost tribes of Israel!'

They are a larger and sturdier race than the Japanese, and have that curious flattening of the leg and arm bone noticed among the cave men. The men wear beards and moustaches from twelve to fourteen inches long and shave the scalp an inch or two back from the front, which lends apparent height to the forehead: the rest of the hair falls over the shoulders in a soft, intense black mass.

The tinge of red or brown so often observed in the hair of the Japanese when it is entirely free from oil or pomade, is never seen among the Ainos. Strange to say, the Japanese have a strong aversion to fair, brown or auburn hair, all of which they term indifferently 'red.' Devils and evil spirits are invariably depicted with 'red' locks. This prejudice is so deeply rooted that it is an absolute drawback to a missionary to have auburn hair.

The Aino complexion is generally brown though many of the women are not so dark as numbers of European brunettes. The nose is short, flat and the nostrils outstarting. But the glory of the Aino face lies in the magnificent liquid brown eyes, and their benevolent and pathetic expression. Though their dress gives them a wild and savage appearance, their beautiful eyes and the gentle, sweet

An Aino Type

smile that illuminates the whole countenance, dispels any doubts that might linger in the breast of a timid traveler.

Most of the older men have a thick growth of bristly hair, about an inch

long, covering the limbs and body. Among the young men this is unusual, though one writer describes two boys who had fine black hair, unmistakably fur, on their backs between the shoulders; but such cases are rare exceptions. The mouth is wide but well shaped, and the lips full. The eyes are straight, not slanting, the brows broad, the skull round and the ears small and low set. The soft, black hair is sometimes wavy but never curly.

The women are not so good looking as the men, due to the custom of tattooing their faces. Two parallel lines are drawn over and beyond the mouth and line made joining the eyebrows together. The coloring matter is dull blue and gives them the appearance of having an exceedingly dirty face, which is also often the case. Two long locks of hair are brought from the back of the head and passed round forward so as to prevent the front falling into the eyes. The rest is then cut short, about two or three inches below the nape of the neck. This is of itself very unbecoming, and when the tattooing is taken into consideration also, it will be readily understood that it would be difficult for almost any woman to look beautiful or even good-looking under these circumstances. The hands and arms are also decorated with geometrical patterns. When a little girl is five or six years old, a band is tattooed near the elbow. Every year another band or pattern is added until the girl is of age or marries. The women are beautifully formed; their figures being slender, lithe and supple, their carriage good and limbs well developed. Their teeth are strong, white and even, and are one of their most attractive features.

Arm of an Aino Woman

In the season the men hunt and fish; the rest of their time is occupied in sleeping and eating. To work and rear children is a woman's part, they say. They do not treat their wives unkindly, though, and whatever they earn the men never take from them; it is their own. A low, soft, musical voice, a gift possessed by both men and women, is one of their greatest charms. Except when violently excited, their tones are carefully modulated and pleasant. At Ishkara the best salmon are caught. Immense seines are used, requiring at least two or three men to work them. These salmon are sent all over the Japanese Empire, and fetch the highest price. Aino weapons are of the rudest description. They consist of a three-pronged spear for spearing salmon through the ice; a single-bladed lance for bear hunting and bows and arrows. The bow is simply a peeled bough, neither trimmed or lightened at the ends. The arrows are very ingeniously constructed in three pieces. The head is formed of a sharp piece of bone with a narrow groove for poison. This piece is fastened to another bone by a strip of bark. The whole is then fixed to a peeled shaft a little over a foot long. The bone part is so arranged that when the arrow strikes, the shaft falls off, leaving the bone sticking in the wound. The poison used is aconite, obtained from the wild plant. A wound from these arrows kills a bear in ten minutes. The flesh immediately surrounding the wound is cut away, but all the rest is quite safely eaten. If a man is wounded by one of these arrows,

his only hope is instant excision of the surrounding flesh. These, and bear traps set with poisoned arrows, have been forbidden by the Japanese government.

The dress of the men, women and children differs but little. In winter they wear two or three skin coats, with hoods of the same. Tight leggins of skin or a sort of bark cloth are worn by both men and women; ordinarily the feet are bare, but when they go hunting moccassins are worn. In the summer the skin coats are replaced by *Kimonos*, or long coats of bark cloth. These are in beautiful shades of fawn. The *Kimono* falls below the knee and is confined at the waist by a narrow girdle in which is thrust a rough dagger-shaped knife with a carved wooden handle.

Sometimes a waist-coat is worn under the coat.

The women's *Kimonos* are longer than those of the men, but they wear no girdle. They close all the way up to the neck. Aino women are very modest and never allow the dress to fall open to the waist, as many Japanese women of the lower classes frequently do.

An Aino will not change her clothes except by herself or in the dark. "It is not pleasing to the gods to see us naked" they say. These remarks must not be construed into an invidious comparison between Aino and Japanese women. Such comparison would be most unfair. Custom regulates almost everything. Their ornaments are large hoop earrings, with or without pendants. These, and silver or pewter beads strung on pieces of colored cotton, and occasionally a pair of brass bracelets or armlets suffice to render "beauty adorned" among a people that might be called "savages" save for their gentle hearts and manners. The Japanese government forbids tattooing, a decree which has caused them considerable distress of mind, as in some unfathomable way it is connected with their few religious ideas. Without it, they insist, no woman can marry. They retain the custom while they have lost its significance—if it ever had any.

Until seven or eight years old the children wear even less than that celebrated savage whose full-dress costume was a "Panama hat and a broad smile." Aino children limit themselves to the amiable expression—in other words, they wear nothing. After that age they are dressed exactly like their elders. Boys wear either a tonsure or tufts over the ears. Little girls allow the hair to grow all over the head and hang down over their shoulders. Girl babies are never despised but little boys are preferred.

Though Yezo has a population of only 123,000, it has an area larger than that of Ireland. It is very mountainous, but interspersed with long, level, grassy plains. Many of the mountains are volcanoes, extinct or active. Magnificent primeval forests might tempt one to stray from the beaten path, but in their depths are frightful morasses and impassible swamps. Hakodate, the treaty port, is situated in the southern portion of the island, and is truly as desolate a place as ever the human eye rested upon.

The summers here are cooler than at Ishkara, where the salmon fisheries are. The first village where Ainos are found is Horobets. It is a mixed settlement of about 20 Japanese and 40 Aino houses.

A curious distinction, a sort of caste line, is drawn between the two races. The Ainos observe a respectful distance and never intrude upon the Japanese. No Aino would dream of building his house next to the dwelling of one of the superior race.

Not a great many years ago the Ainos living upon the island of Yezo were reckoned at 20,000, now there are scarcely 15,000. Their houses are really huts. A wooden frame is first built and on this bundles of reeds are tied. Inside is a second wall of reeds tied singly. The roof is thatched with straw in three layers, so that it

An Aino Type

presents the appearance of three roofs, the second shorter than the lowest and the third the shortest of all. Like the Chinese and Japanese, the Ainos place no value upon time, and the reeds and thatch are arranged in a neat and uniform manner. The roofs are extraordinarily steep, very much like those of the Quebec houses, and probably for the same reason—to shed the heavy snow and prevent it from crushing in the roof. To each house there is a little ante-chamber, and, in order to enter, it is necessary to pass through this little room, which is used to store all sorts of things, extra reeds, nets, etc.

It is never lighted and is separated from the house proper by a square curtain of rushes bound with hide. Entering the house, we find ourselves in a large room about 25 feet long by 30 feet wide. In the center is a square fireplace, over which is suspended an iron pot for cooking. Round it sit a group of wild-looking men dressed in skins, and two or three naked children. The old men have a most venerable appearance, with their long white beards and flowing hair.

The walls are only about four or five feet high, the roof about 14. The floor is packed earth or rough boards covered with coarse rush mats. Above the fireplace a square hole is left in the roof for the escape of smoke. A mat is hung before it however, which prevents this most desirable consummation, and a good deal remains in the room.

Ainu Gods of Shavings

The head of the fireplace is the seat of honor and here a raised ledge about 12 or 13 inches high and 5 feet long is erected. On this, more costly mats are placed. The Ainos sit crosslegged, like tailors, never on their heels as do the Japanese.

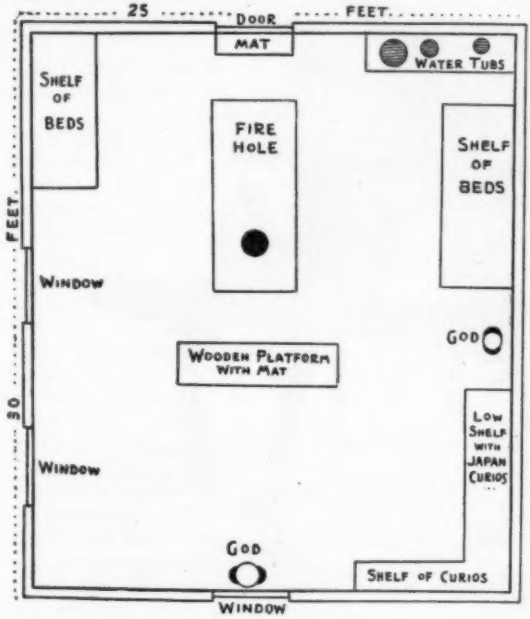
The windows are square holes closed at night by shutters made of two boards fastened together by a piece of rope.

Around two sides of the room are benches for sleeping. These, it has been surmised, are the origin of the

Japanese *tokonoma*, or recessed bed place. At night, mats are hung in front of each sleeper.

In every Aino house is a long shelf containing beautiful and valuable curios, ancient lacquer boxes, inlaid swords, pieces of satsuma, ivory carvings, etc.

These they never sell, and part with only under certain conditions. The only manner of lighting the houses at night is either by a piece of birch bark held in a cleft stick thrust in the wall, or a reed floating in a saucer of fish oil. The first method requires constant renewing, and the second gives out "a most ancient and fish like smell."



Plan of Aino House

Aino ceremonies and forms of politeness differ entirely from Japanese. They are much more European and less Oriental than those of the latter. As we left the house, the men stood up, and raising their hands and stretching them outward, waved them two or three times inward and stroked their beards. A gentle, pathetic smile of farewell lighted up their kindly faces. Embarking in an elm "dugout" we went a few miles down one of the rivers. As we came to dangerous places, the men waved their hands high above their heads, the palms outward, and broke into a sort of prayer. The roaring of the foaming current, for all these rivers are narrow and rapid, and the full, rich voices of the Ainos, as they burst into a weird, unearthly chant, made a scene never to be forgotten. Their wild dress, in such ill-accord with their mild, pathetic expression and gentle manners, and the strange, lonely scene, would leave an indelible impression upon even the most thoughtless. When one recalls that, like most dying races, they cling to those traditions which would prove them once a great nation, their melody seems to a stranger like the song of a dying swan.

One of their invocations has been translated somewhat as follows: "To the sea which nourishes us and the forest which protects us, we pray and give thanks. Ye are as two mothers fostering the same child. We pray you be not offended if for one we leave the other."

"The pride of the forest and the stream are the Ainos."

From time to time as they prayed, the boatman cast into the seething waters pieces of wood like little wands, with bunches or curls of shavings left hanging to the top. These are the emblems or symbols of their gods. Their religious beliefs are few and very vague. They are nature worshippers and deify mountains, streams and rivers, calling them all *kami*, or

spirits. The most important of their religious ideas is the worship of the bear, whom they admire for ferocious courage. The great Aino fete day is the festival of the bear. On this occasion, all wear their finest dresses of coarse blue cloth braided with rough scarlet or white braid and an apron of the same.

The costumes are really very handsome, and the scene, though wild enough, is gay with bright coloring. In the spring, they endeavor to catch a bear cub, which is brought to the chief's house and suckled by a woman. As long as it is very young, it is treated as a pet and played with by the children. When it grows too rough for the house, a wooden cage is built outside the door, and there it remains until the end of the hunting season, when the great festival is held.

Aino Grain House

These ceremonies differ a little among the coast and the mountain Ainos. While the bear is yet in the cage, the chief takes from his girdle his rough, dagger-like knife and wounds and irritates him. The enraged animal is freed, and all fall upon him and endeavor to draw blood, for it will bring luck the whole year to the man who inflicts a wound severe enough to bleed. After he is mortally wounded and dying, weapons are offered to him with which to avenge himself, and a sort of apology is chanted, after which his head is cut off. Sometimes his foster mother shrieks and cries during the attack, and when it is all over, formally beats each one of the slayers. Reverencing this animal as they do, it seems a curious anomaly that they should hunt, kill and eat it as they do, and use its skin for various purposes.

To call an Aino a bear is to make a most flattering comparison, though there is nothing very fierce or cruel

about any of them, for they are all kind and sympathetic both to each other and to strangers.

In some of their settlements, instead of the bear's head being cut off, a rope is passed just above the shoulders, upon which the men jump until his neck is broken. As he expires, they dance around him solemnly, singing "Good-bye, bear; come back soon into an Aino."

The women never take part in this dance, or in fact in any ceremony. They never salute strangers, nor have they any form of politeness whatever. The prayer to the bear to return in an Aino would seem to indicate a belief in the doctrine of metempsychosis, but close questioning could elicit no other information than the vaguest, most shadowy idea that there might be something of this kind, but nothing more definite could be discovered.

The wands with the hanging shavings, of which I have already spoken, are to be seen stuck in the ground outside every Aino house. Inside, six or seven are fastened about in different places. When *saké*, or rice whiskey is drunk, six libations are made with a carved sake stick to this god and another to the fire; the cup is then waved toward the drinker and finally carried to the lips and emptied. A superstitious feeling prevents the sale of the sake stick of a living man, but occasionally one can be bought from the friends of a dead Aino, though the stick is usually buried with them.

The sun, fire and the moon are "kami" also, but the stars are not, for they give neither light nor heat. The most deplorable habit the Ainos have is their terrible drunkenness. An inordinate love of saké, unfortunately bound up with their religion, is the great failing of an otherwise moral, chaste and upright people. This evil it will be most difficult to eradicate, as not to drink they think displeasing to the gods.

The Ainos have made but little progress, and are much the same as when first depicted by their conquerors. Eating rice, wearing cotton clothing and the advance from pure nature worship to hero worship, as shown by the apotheosizing of Yoshitsuné, are their most noticeable steps in the forward march. The deification of this famous Japanese hero is most remarkable, and like many other things connected with this race, is wrapped in mystery.

They worship him from a sense of gratitude for benefits conferred upon their ancestors. He taught their forefathers, so they say, written characters and various arts, since lost, the books of instruction having been taken away, they assert, by a later conqueror. He gave them righteous laws and tried to civilize them, and in grateful remembrance, homage is paid him under the title of *Hanguan Dai Mio Jin*. Great Illustrious Law Giver.

The Aino language is most primitive, and is very like a Japanese dialect, though differing from the latter in possessing real pronouns. The Japanese learn to understand and speak it very readily.

Each Aino community has its own chief, who exercises a sort of paternal authority, somewhat like the patriarchs of old.

Polygamy is very unusual, but under certain circumstances may be said to be tolerated rather than permitted. If the first wife of the chief be childless, he may marry another, but each wife must have her own house; but even this is the exception, not the rule.

The office of the chief is not necessarily an hereditary one. When a man grows too old to perform the required duties he selects, to succeed him, that member of the community he thinks most fitted for the position, irrespective of the fact of his being or not being his own son. Should his son be the ablest man, his father's choice falls upon him for that reason and no other. When a quarrel occurs the chief arbitrates, punishes the offender and fixes the amount of the

fine, which is always paid in Japanese curios.

The women are nearly always virtuous and faithful to their husbands, but should one prove false her spouse can bestow her upon her lover, and the chief fixes what curios the guilty man must pay to the injured husband. If a man commits theft, he must return the stolen article with a present as an atonement. Nothing can be done without the chief's knowledge and counsel; his decision is final and affairs the young woman, though not forced, is a passive party. It is not customary for the women to marry before seventeen nor the men until twenty-one, nor even then unless the intending husband has a house to which he can bring his bride, for no dwelling is ever tenanted by more than one family—each has his separate abode.

The bride's dowry is not very costly, generally it consists of a pair of large hoop earrings and a long

Map of the Aino Country

without appeal. Even in so personal a matter as marriage he must be consulted.

If a young man wishes to wed, he chooses some girl and then asks the chief's permission. If it is granted, the suitor, either personally or through a go-between, addresses the girl's father, and if his consent is obtained the lover presents him with a Japanese curio.

This is the betrothal, and soon after it the marriage takes place. In such cloak or *kimono*. Should she be childless her husband may divorce her, but he must send her back to her parents with an abundant supply of good clothing. If, however, she should have children, he cannot divorce her at all.

Should she become a widow, with the chief's permission she may remarry, but must mourn her dead husband for a period varying from six to twelve months. During this time she remains shut up in the house, but

goes to the door at stated intervals to throw *saké* to the right and to the left. In some communities the time of mourning is only thirty days for a widow and twenty-five for a widower. But if her husband was the father of a family the house is burned to the ground and she and her children must live with some friend for three years, after which the house is rebuilt. When a dwelling is accidentally burned down all the men make a sort of "bee" and lend their assistance to build another.

The Ainos regard hospitality not only as a virtue, but an imperative duty. When travelers arrive in a village, if the chief be absent, all the old men come out to welcome the strangers, for old age is held in great reverence. When the visitors depart, the hostess presents them with cakes of boiled millet to eat on their journey.

Among every nation, whether civilized or savage, are found some little superstitious customs, indissolubly connected with such important occasionsas the birth of a child; some trifling act by which the fond parents hope to secure a happy future for the new-born infant. To this end the mountain Ainos place a millet seed in its mouth, while the coast Ainos put a piece of salt fish between its lips. This, it is thought, will bring the child good luck and plenty all its life.

No matter at what hour a child may be born, it is given no food until a night has passed over its head. The women carry the children on their backs either in the loose clothing or a net. A strap passed over the mother's forehead assists her to support the little one's weight. The children are sweet and attractive little creatures, caressing and loving to be caressed. They are docile, obedient and helpful. Little boys are taught to salute like their fathers, and it looks droll to see little ones who can scarcely toddle, make their solemn little salutations and bows as they enter or leave the house.

Every one receives this mark of respect except the mother! The men are very fond of their children and fondle and play with them, but carry them in the arms in the usual European manner.

The Ainos have very few domestic animals, except large yellow dogs, used for hunting, and which, like their masters, look savage, but are gentle, though never allowed to enter the house.

Aino food is of the coarsest description, millet, fish (fresh, salt or dried), venison, sea weed, slugs, vegetables, roots, berries, bear-meat,

Aino Mortar and Pestle

mushrooms, in fact, anything they can get. A sort of clay is made into a most uninviting looking soup, which it really required too much courage to even taste. This clay is found in one of the valleys and when cooked, reminds one of a very thick and dirty potato soup.

Like the Japanese, the Ainos eat their solid food with chopsticks. Perhaps one of their most curious customs is riding tailor fashion. This they do with the greatest ease. To see an Aino, with his bare, hairy legs, and long bark coat, seated crosslegged on a packsaddle, his venerable face wearing a calm and benevolent

expression, makes so severe a strain upon one's politeness that a sense of the ridiculous is apt to utterly upset one's gravity. It is as if one of the patriarchs had suddenly returned to earth to give a circus performance! In spite of their total neglect of washing, they are a very healthy people. A slight skin affection is frequent with the children, and occasionally seen among the men, induced in the latter case by their constant irritation of gnat bites; this and perhaps an attack of bronchitis, are their chief ailments. The children never suffer from scarlet fever, measles, etc., though it may be remarked, by the way, that medical men have often observed how seldom the children in any part of Japan have these childish diseases, and how very trifling any attack is. The medicines used by these people are very primitive and the effect, if any, is due principally to imagination. Bear's liver, dried and pounded, is the chief panacea for all the ills the Aino flesh is heir to.

It is strange that living next to a race so extraordinarily fond of bathing as the Japanese, that the Ainos should be so entirely oblivious of the necessity of washing their bodies. The women dash a little water over their hands once a day, and this is the only washing that takes place among the whole household.

The houses are well ventilated and so smell sweet and clean, but the wood smoke stings the eyes as one enters, for though there is a hole for its escape, the mat hung before it prevents the free exit. The soot that collects on this mat is often used for tattooing purposes.

The coast Ainos are shorter and more liberally endowed with hair than those living in the mountains. One traveler has given an account of an Aino whose whole body was covered with fine black hair that was quite curly between the shoulders. His limbs were unnaturally long like those of an ape, and the body short and stunted. He seemed almost idiotic and was altogether a most unfortunate and repulsive looking creature.

Though so very intelligent in appearance, it is an incontrovertible fact that these people are intensely stupid. In disposition they are very attractive; they are scrupulously honest, kind, gentle, most conscientiously truthful, humble, submissive, chaste and upright. They have but one great fault—intemperance.

The women are very industrious, and when not occupied with actual household duties, weave bark cloth. The men bring them this bark in long, narrow pieces of six or eight feet. The old women tear off the fine inner layer in strips, knot it carefully and roll it into large balls.

The weaving is done in the most rudimentary fashion possible. The younger women fix a large iron hook into the ground; one end of the bark is fastened to it and the other to the weaver's waist; over the ankles is placed a notched wooden frame like a great comb; a hollow roller to keep the upper and lower threads apart, and a carved shuttle, complete the very simple apparatus. It requires great skill and knack to supply just sufficient tension, and is very fatiguing.

On very solemn occasions, the Ainos use a terribly severe ordeal. If two men quarrel and the chief cannot decide which is in the wrong, a pot of boiling water is brought, and both the disputants must thrust the naked hand and arm into the scalding water. The man least burned is assumed to be innocent. This ordeal was also employed by the ancient Japanese who borrowed it from the Ainos.

The men make their canoes of elm trunks, by simply hollowing out the center. It takes two men five days to make a fairly good one. For use on the sea, they lace together bark canoes, which are lighter and more manageable. The Ainos are not a wandering people, but are born, brought up and buried in the same place, one generation after another.

An Aino House

The young support and reverence the old, and are always kind toward them. Until the 17th century, the Japanese made no effort to colonize Yezo. Sometime during that century, it was granted to Matsumae Yoshiri as fief and he and his successors held it until the recent dissolution of the feudal system. The unfortunate natives were very cruelly treated and kept in a state of densest ignorance. It was made a penal offense for any one to teach them either to read or write!

has created a special department, the Kaitakushi, or development department, to look after their interests. At Satsaporo an agricultural college, modeled on the American college in Massachusetts, and a model farm have been established. A company has also been formed to develop the immense coal beds in Yezo which are rapidly becoming a source of wealth to the Japanese Government. About 11 years ago, when the Mikado issued the great proclamation granting his subjects constitutional government,

Kura or Store House

The curios found in every Aino dwelling and of which they invariably speak as "presents," it has been surmised, were probably given to their forefathers by Matsumae and his successors when the Aino chiefs went to pay him tribute. They value them very highly, and nothing will induce them to sell the most trifling one of them.

Their tribute was paid chiefly in skins, and to this day part of their Government dues are so paid.

The Japanese Government has determined to right their wrongs, and the Aino chiefs, dressed in modern attire, took part in the procession and were placed on a footing of equality with other Japanese subjects. This was a most wonderful and humane concession, as hitherto they had been despised and ill treated; but now, it is to be hoped, they have fallen upon better days.

In conclusion, the Ainos may be said to occupy a similar position to the Japanese as the American Indians do to the white inhabitants of the United States and Canada.

LIFE IN HONOLULU

BY BERTHA F. HERRICK.

NESTLING at the foot of bold, weird mountains, the volcanic summits of which are partially concealed by shifting rain-clouds, lies the metropolis of Honolulu, embowered in a wealth of luxuriant foliage, over-arched by a sky of deepest azure, framed in a gorgeous tropical rainbow —to the billow-tossed voyager, a vision of surpassing loveliness.

Entering an "express," or licensed rockaway, of which there are three hundred in the city, we are borne from the steamer landing quickly along shady, foreign-looking streets to the peace and quiet of an island home.

Hawaiian hospitality has passed into a proverb. The stranger, well-introduced, or depending merely upon his individual merits, may be assured of a hearty welcome to a refined and cultivated society.

The attractive villas, lining the winding avenues, are seated in the midst of wide lawns of Bermuda grass, and surrounded by myriads of exotics, among which are many varieties of towering palms, fine specimens of the banyan-tree, bread-fruit, algaroba, oleander, tamarind, monkey-pod, alligator-pear, traveler's-tree, and the hibiscus, or celestial rose; while bananas, guavas, pine-apples and mandarin oranges may be had for the gathering.

The architecture of Honolulu is usually unpretentious, the dwellings being often one-storied structures of wood or stone, supplied with numerous verandas, smothered in bougainvillia and blossoming passion-vines, or other hardy creepers, which are extended completely over the lava drive-ways, by means of trellis-work.

Everything suggests comfort, ease and luxury.

The rendezvous of the household is the broad, cool *lanai*, or main piazza, where wicker-sofas, lounging-chairs, hammocks, and tables with the latest magazines invite repose and sociability. When the attentions of the sportive mosquito become too assiduous, resort is sometimes made to large cages of fine wire netting. From this delightful open-air retreat, double doors, composed of adjustable wooden shutters, lead directly into the principal apartments. These portals stand ever open throughout the day, visitors being received at all hours, beggars, peddlers, burglars, and prying junk-men being practically unknown.

From cellar to garret the floors are uniformly covered with white Chinese matting, on account of the heat and the ravages of insects.

Firesides there are none, so the only chimneys are those connected with the kitchen ranges, the culinary departments being separated from the main buildings by passage ways of lattice work.

The telephone is constantly employed on every possible pretext; and is apparently an indispensable institution, there being over 11,000 instruments to a population of 25,000.

The home dress of the "foreign," or white ladies, usually consists of a muslin *holoku*, or "Mother Hubbard;" and the church or visiting costume of white lawn, pongee or India silk. But often they step into their ever-waiting carriages in loose morning-gown and slippers, supplemented by shade hat and silk gloves, and shop at leisure from the curbstone.

The climate of this "Paradise of the Pacific" is not a little peculiar. During the winter (?) months it may rain for seven days, but dust will be flying on the eighth, — the water

rapidly soaking into the porous coralline soil. Occasionally furious showers like cloudbursts sweep suddenly over the city, drenching one side of the street, while the other is basking in radiant sunshine. The trade-winds descends like a heavy curtain calling into requisition numerous electric lamps. The silvery moonlight evenings, however, possess an indescribable witchery that affects the most misanthropic.

Queen Lilinokalani

blow for nine or ten months beginning in April. The *mauka*, or mountain wind is conducive to health; but a southerly breeze is known among the natives as the "sick wind."

Nocturnal displays of heat lightning are of frequent occurrence.

There are no lingering twilights; but immediately after sunset, darkness

Then the Royal Hawaiian Band gives open-air concerts in one of the many tropical parks which are illuminated by torches and Chinese lanterns. The broad, smooth roads are alive with teams and with gay parties of young horse-back riders.

Society is broken up into cliques, the two principal factions being

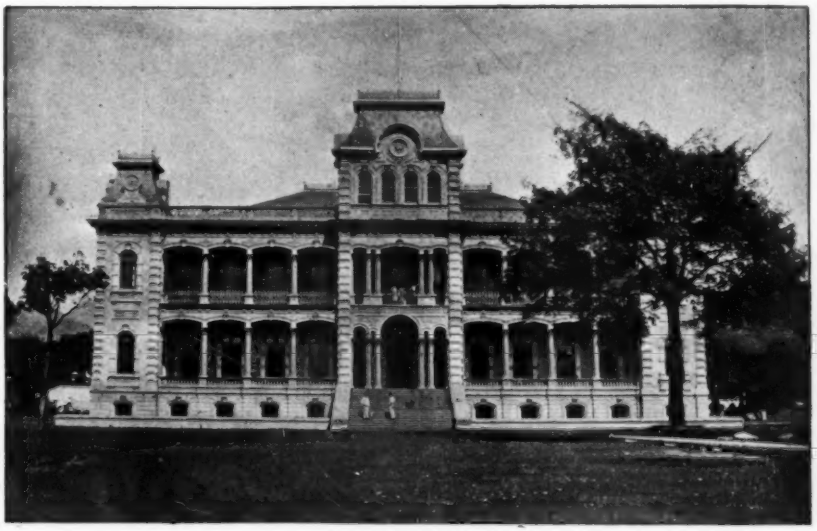
familiarly known as the "Government Crowd" and the "Missionary Set." The former consists mainly of Hawaiians, half-whites and English, and the latter of Americans or descendants of the early missionaries.

Social life is paramount. What with receptions, five and seven o'clock teas, dances, "*Luaus*" or "poi-suppers," lunch parties, attendance upon political demonstrations, drives to historial points of interest, Saturday afternoon baseball matches, lawn-tennis tournaments, musicales and lectures, visits to men-of-war in the harbor, amateur theatricals and evening bathing parties, the visitor is very busily occupied.

Attention is naturally first directed to the Royal or Iolani Palace, an imposing three-storied edifice of concrete, containing 40 rooms, and surrounded by park-like grounds some acres in extent. To the right of the main entrance is the throne-room, an immense apartment, hung with draperies of deep crimson, and in which are the dais, the famous yellow feather cloak, the crown and scepter, coat-of-arms and other insignia of sovereignty.

The reception-room and banquet hall occupy the opposite wing, while in the upper story are the sleeping apartments, the library and the music-room.

Furnished throughout by professionals, it abounds in all that is rare, rich and luxurious, and costly gifts from European and Asiatic rulers add greatly to the general interest.



The King's New Palace

Queen Lilinokalani is an intelligent, cultivated Hawaiian woman, in middle life, endeavoring to creditably perform the duties of her difficult position. Although now in mourning for the late Prince Consort, she is usually prominent in social circles, and is on terms of friendliness with the white ladies of the capital, and an active promoter of public schemes of a philanthropic nature. The Dowager Queen Kapiolani, widow of the late King Kalakaua, is of a quiet and retiring disposition, and is much beloved by the natives.

The sole heir to the throne is the Princess Kaiulani (whose full name is Her Royal Highness Princess Victoria-Kawekiu-Kaiulani-Lunalilo-Kalaninuia-Kalapalapa), a sweet-faced young half-white of sixteen, daughter of the late Princess Likelike, at present being educated on the Continent.

It has long been the custom for the reigning Queen to give monthly outdoor receptions or garden parties to residents and tourists. On these very enjoyable occasions, she is assisted in receiving and entertaining her guests by connections of the royal family, the Chamberlain of the Household, Members of the Houses of Nobles and of Representatives, dusky maids of honor in gorgeous satin *holokus*, the native militia, and the Royal Hawaiian Band.

Invitations are presented at the palace gates, which are guarded by some half-dozen of the Queen's own guard. Her Majesty is usually seated on the emerald lawn, under the shade of a spreading tropical tree, and is accompanied by the Chamberlain, to whom are handed cards bearing the name and country of the visitor.

Then ensues the formidable ordeal of introduction, and of bowing and backing out of the august presence, conscious that one is the cynosure of a hundred or more critical eyes. Mental equipose is, however, speedily restored by watching the presentation of the next arrival.

Behind the Palace are the "Bungalow," a low, latticed structure, containing the private apartments of the monarch, and the "Barracks," a

The Hula Dance

castellated building, harboring the Household troops as well as the gun carriages, cannon balls, and the gilded chariot of state.

Immediately across the road is the Government building, in which are the court room, offices of Ministers and Justices, Treasury, Law Library, and the National Museum, where are exhibited many valuable ancient Hawaiian curios, conspicuous among them being spears, drums and war clubs, necklaces of human teeth, immense feather plumes or "*kahilis*," "*tapas*," and an enormous red and yellow feather helmet, said to have been worn to battle by some stalwart high chief.

In the spacious court room are held the ceremonies attendant upon the opening of Legislature, which brilliant pageant may be feebly described as a bewildering mixture of feather cloaks, stars, badges and orders, "kahilis," pages and train bearers, judicial wigs and gowns, ministerial vestments, gold lace, brass buttons, epaulets and clanking swords, *decolleté* dresses and swallow-tailed coats, waving flags and bursts of triumphal music.

The public buildings of brick or coral rock are numerous and handsome, the eye being especially attracted by noble institutions of learning or benevolence.

Oahu College, from whose halls have been graduated many of the children and grandchildren of the early American missionaries, is picturesquely situated in the suburbs, and its wide grounds are surrounded by a thick hedge of the beautiful night blooming cereus.

The group of Kamehameha schools are handsome, well-endowed establishments, where native boys receive a thorough industrial training; and Kawaiahao Seminary is an admirably conducted home school for native girls.

The Queen's Hospital nestles under the shadow of avenues of majestic date palms, and is well nigh buried in cataracts of blooming creepers.

Mention must also be made of the cool and airy Hawaiian Hotel, the center of municipal interest, where many distinguished guests have been entertained and which is a feature of life here.

The Central Union Church, opens wide its doors to all Protestant denominations, as well as the Congregational, and there are also two flourishing native churches. The list of places of worship is completed by a massive Episcopal Cathedral, a Chinese Church and a large Roman Catholic Church for the Portuguese.

Ancient Idol

Native money is in general circulation, and bears the National motto—"Ma mau ka ea o ka aina i ka pono"—The life of the land is established in righteousness.

Native Musicians

The city is extremely cosmopolitan —Chinese, Japanese, Portuguese, New Hebeides, Gilbert Islanders, Australians, Micronesians, Germans and Samoans all being largely represented. Some of the Chinese are respected merchants and lawyers, and live in snug residences surrounded by picturesque tea-gardens, and drive in their own carriages.

bowl, an extinct crater in the rear of the city, there is obtained a grand, panoramic view of the surrounding country and ocean.

Open street-cars convey the sightseer to Kapiolani Park, and excursions are made to Pearl Harbor by means of the new Oahu Railway.

The natives are large and finely formed, usually inclining to stout-

An Hawaiian Type

So densely populated a section is Chinatown, that it is easy to imagine one's self on Dupont or Sacramento streets in San Francisco.

All tourists visit the Pali, a sheer precipice of a thousand feet, over whose brink Kamehameha the Conqueror, drove the forces of the King of Oahu. From the summit of Punch-

ness, which is considered a beauty. Their skin is a bronze-brown, and their hair black and straight. The men wear the regular working-man's dress, to which they add finishing touches in the shape of gay Bandana handkerchiefs, and wreaths of brilliant natural flowers; and the women, or *wahives* adorn themselves in bright

calico *holokus*, and *leis* of peacock-feathers, shells, beans, seeds, or fragrant *maile* vines.

Both men and women of the lower ranks commonly go barefoot, and are equally addicted to cigarette-smoking.

Life moves very smoothly with these children of the sun—nature furnishing the maximum of harvest for the minimum of labor.

said of a Kanaka that he will walk three blocks to get a horse to ride across the street.

Natives are also employed as city policemen, but their duties appear to be exceedingly light, owing, possibly, to the inertia of a warm climate.

The Hawaiian language is flowing and musical, every word and every syllable ending with a vowel. Some

Palms near the King's Hospital

Some hold office under the Government, but their principal occupations are taro and banana-raising, fishing, poi-pounding, weaving mats, baskets and necklaces to beguile the departing tourist; manufacturing head-gear of cocoanut, pumpkin or palm fibre, and the mid-ribs of maiden-hair ferns; surf-bathing, sleeping, singing, and especially horse-back riding. It is

of the native words are in every-day use among the white residents. Thus *aloha* is an expression of greeting, farewell, gratitude or affection; a *pilikia* indicates an awkward or disagreeable situation of any kind, from a house on fire to a scratched finger; *pau* is finished or completed, and *tabu* is anything forbidden.

Sooner or later foreigners are

initiated into the mysteries of the *luau*, or Hawaiian feast, which consists of pork, chicken and taro-fed dog, baked in rude underground oven; mullet, devil-fish, limpets, sea-urchins, mussels, live shrimps, sea-mosses, raw fish and other marine delicacies, as well as the celebrated *poi*, and yams, cocoanuts, rice, plantains, guavas and kukui-nuts.

Mats are spread upon the floor or ground and covered with sweet-scented ferns in lieu of a tablecloth. Rushes take the place of seats, and everything is eaten with the fingers, while song and laughter are invariable accompaniments.

The fanna of this vicinity is not extensive. When the patron saint of the Emerald Isle rid that fair country of its superfluous serpents — perhaps some ancient Hawaiian deity, not to be outdone by Irish enterprise, drove from these coral islands not only their venomous reptiles, but all other land vertebrates as well; for indigenous animals there are none worth mentioning, though articulates and insects come nobly to the front to take their places.

Fishes are found in many varieties, and are brilliantly tinted and curious.

Only a few kinds of birds are ever seen on this island, the chattering mynah and the thieving rice-bird being the principal representatives.

The seaside resort of the Honoluluans is beautiful Waikiki, situated some three miles distant from the metropolis among groves of lofty cocoa-palms and guarded by the hoary old crater of Diamond Head.

Here are well-appointed summer homes occupying grassy, shaded terraces, immediately above the long stretch of silvery beach which commands an unbroken view of the boundless sapphire-hued Pacific, upon whose gently-swelling tide many brave vessels ride at anchor.

The bathing is perfection — the waves expending their main force upon a coral reef, a quarter of a mile from shore, and there being no fear of chills, sharks or quick-sands.

Out-riggered canoes bound lightly over the booming surf in search of finny prey; while nimble fingers strum the responsive "taro-patch" fiddle, or wandering native serenaders make the night air musical with their plaintive melodies.

The commercial interests of the islands are so interwoven with the social life that some mention should be made of them. Probably the most important business interest is centered in the large sugar plantations that are found all over the islands and which have given the islands a world wide reputation and name.

Statistics are dry and it only need be said that the wealth derived from this source has filled the coffers of the islanders for many years. It is because of this rich production that the question is continually rising as to the possibility of annexing the islands to the United States, but as this is against the fixed policy of this government it will probably not be accomplished in our day. These islands of the sea are happy in peace; few, if any internal discords occur, and these soon blow over and it will probably be many years before the happy isles will be disturbed by outside nations, or alien political interference of any kind.

The islands will undoubtedly soon be connected with the outside world by a cable. The United States Fish Commission Steamer *Albatross* has been over the ground between the Sandwich Islands and San Francisco, and at the present time is on ground again surveying the route, details of which will soon be given to the public.

This will bring this favorite resort nearer home and take away the one objection it now has as a winter resort, the impossibility of reaching it by telegraph. The islands are growing in popularity — even winter finds the fine hotels crowded with visitors from all over the world who spend the months in a round of pleasures in

the open air. The climate is delightful and health-giving and many of the homes are owned by those who were once invalids but who have gained a new lease of life in the heart of the Pacific.

There are two ways of reaching these islands in the Pacific. The first and possibly the most comfortable, by the steamers of the Oceanic Steamship Company, of whom John D. Spreckles and brothers are proprietors. There are five large and commodious steamers on the route, and for one, at least, the *Alameda*, I can bespeak a most delightful equipment, everything being done by the officers to render the trip a pleasure. Mark Twain wrote in the log book:

"No alien land in all the world has any deep, strong charm for me but that one; no other land could so longingly and beseechingly haunt me, sleeping and waking, through half a lifetime, as that one has done. Other things change, but it remains the same. For me its balmy airs are always blowing, its summer seas flashing in the sun; the pulsing of its surf beat is in my ear; I can see its garlanded craigs, its leaping cascades, its plumy palms drowsing by the shore, its remote summits floating like islands above the cloud-rack; I can feel the spirit of its woodland solitude; I can hear the plash of its brooks; in my nostrils still lives the breath of flowers that perished twenty years ago."

If the tourist wishes a longer stay upon the ocean, he can take passage on the sugar schooners that ply between the islands and San Francisco, but the ideal trip is one made on the *Alameda* or her sister ships that take one as if by magic into the heart of the Pacific tropics.

The sights and scenes of this lotus-eating land, with its grand volcanic scenery, its wealth of tropical vegetation, its political pomp and commercial enterprise, its happy homes and loyal hearts, its summer air, its music and gorgeous sunsets, dwell ever in the memory; and no stranger leaves its hospitable shores without a lingering backward glance and a regretful *Aloha Oe* to *Hawaii Nei*.

THE BLUE ANGEL OF ELBINGERODE

BY WILLIAM H. CARPENTER

ONE evening in late September, a group sat about the fire in an old farmhouse on Cape Cod. Out of doors, a brisk wind had driven away the last vestiges of a rainstorm that had persistently beaten all day, and the night was clear and cold—the first definite announcement that summer had gone and autumn had arrived to take its place. The fire that burned brightly in the little low-ceiled room was, accordingly, a necessity, but it had acted as an inspiration upon those about it, and each one, like the host and his guests at the Wayside Inn in the poem, told a story, real or imagined, as he chose, for the common entertainment. The pedagogue had told his tale, as had the painter and the poet. Emerson's lines over the fireplace—"This night shall be my Germany of mystic philosophy and dreams"—prompted the professor, when his turn came, to recall an actual experience that had once befallen him, and this is, in his own words, the story he told.

In July, 188—, three Americans were studying German at the house of Dr. P——, in Brunswick. With this clientage, the apartments then occupied were inconvenient and cramped, and it was decided to take a roomier house in the newer part of the town. It was accordingly suggested by one of the students and heartily seconded by the Frau Doctor, that while the family goods and chattels were being transferred to their new quarters, the young men should take a foot tour up into the not distant Harz mountains. A guide-book was therefore obtained, the route carefully mapped out beforehand, and with little more than scrip and staff the three started one bright morning, in a third-class compartment on the train, for Harzburg, whence they were to set out on foot to the unknown regions beyond.

They had already walked a week, when one evening, just at nightfall, they arrived in their chronic condition of hunger and thirst at the little village of Elbingerode, which you will find by the map, if you care to look it up, is far back in the mountains. It was not hard to choose an inn, for, although there were several in the place, we had already learned from the guide-book that one, "The Blue Angel," was *za empfehlen*, particularly on account of its *cuisine*. We found it in the long, straggling street, and over the door a blue angel with a broken nose stretched its wooden wings and justified the name of the hostelry.

Within, the general air of neatness that pervaded everything, from the carefully sanded floor to the white cloths on the tables in the long, low guest-room, was the prevailing characteristic. A party of Goettingen students, also on a foot tour, entertained us and themselves during the evening with songs, one of which was cleverly illustrated in chalk on a door that had been brought in with much mock ceremony. After having eaten, drunk and made merry in a wholly rational manner, we helped ourselves to candles from the common stock in the hallway, and at a seemly hour lighted ourselves to the room that had previously been assigned us in the second floor of the inn.

The bedroom, since it plays an important part in the story, were best described in detail. It was in shape almost square. The door from the passage entered it in the middle of one side. In the side opposite were two windows opening into a court-yard. The wall to the right of the

door was unbroken. On the left, nearly in the center, there was, however, what was apparently a sliding window, which one of us tried and found securely closed. There were three beds in the room—one in each corner to the right of the door and one directly under the sliding window on the left. Quite by accident, the bed under the window fell to my lot, and almost immediately, following the example of my tired companions on their side of the room, I was ensconced in it and soundly asleep.

There had been no conscious lapse of time. It might have been an instant or an eternity for aught that I could realize, when all at once I was awake and sitting upright, gazing at the window over the bed in an agony of fear that brought the perspiration out upon my forehead and made me shake as if in a palsy. I had heard nothing and seen nothing, but while I continued to look with a dreadful fascination, noiselessly a face appeared at the window, pale and distorted. The moonlight from one of the other windows fell full upon it, and I could see every feature with an unmistakable distinctness—even the heavy welt of a scar across the forehead at the edge of the hair, and a smear of blood that looked red and fresh over one cheek. For an awful instant the wild eyes met mine with a flash of recognition, and then the whole vanished as noiselessly as it had come.

Then, at last, in unreasoning terror, I sprang from the bed and crouched on the floor of the room. Both of my companions, awakened by the noise, started up and eagerly asked what was the matter. As soon as I could, I excitedly told my story, which was received with a manifest incredulity that my earnestness did not dispel, and an investigation was at once proposed. We found the sliding window fastened from the other side, but a candle held up to it, while it did not reveal the whole interior, showed that there was absolutely nothing at all in the room as far as could be seen, not even a piece of furniture of any sort. The next door along the passage, that unmistakably led into the room, was locked. A glance from the other windows of our own room into the court showed a bright moonlight night in which everything could be seen almost as distinctly as by day. Overhead, a cloud now and then floated lazily across the patch of sky visible from the window, but there was nothing ghostly or unusual in any of the surroundings, without or within. While we stood looking out of the window, a bell close by sharply rang out a single stroke, and the hourly song of the watchman came faintly from the distant street. There was clearly nothing to do but to go back to bed, and with the admonition not to disturb them with any more nightmares, however interesting they might be, my companions settled down again to sleep, as was soon apparent from their regular breathing. As for me, I had had all the sleep vouchsafed me for that night, and I was glad when the long hours had finally dragged themselves by and it was time to get up to dress. I had to submit them to a further incredulous questioning about the episode of the preceding night, and was finally almost ready in the sober light of day, to believe with the others that I had only had a most vivid dream.

I was, however, in this belief soon set aright. Below stairs, the head waiter greeted us with a "Good morning, gentlemen. Have you heard the news?"

Of course we had not, and he continued: "There was a murder last night, just around the corner."

A young man of the place, he told us in response to our questions, back from his military service on a furlough, had before his departure gained the affections of the daughter of the village cobbler. He now had finally asked the father for the hand of his daughter, but he was a worthless

The Face at the Window

fellow, and the father had flatly refused his consent. This had led to high words between them, and beside himself with anger, the younger man suddenly snatched up a knife and buried it in the other's breast.

"And the murderer?" I eagerly asked.

"He has escaped."

"What time was this?"

"A few minutes after half-past twelve o'clock."

I was trembling with a new excitement. "Has the murderer a heavy scar straight across his forehead?" I eagerly asked.

"Yes," he said with astonishment. "Do you know him?"

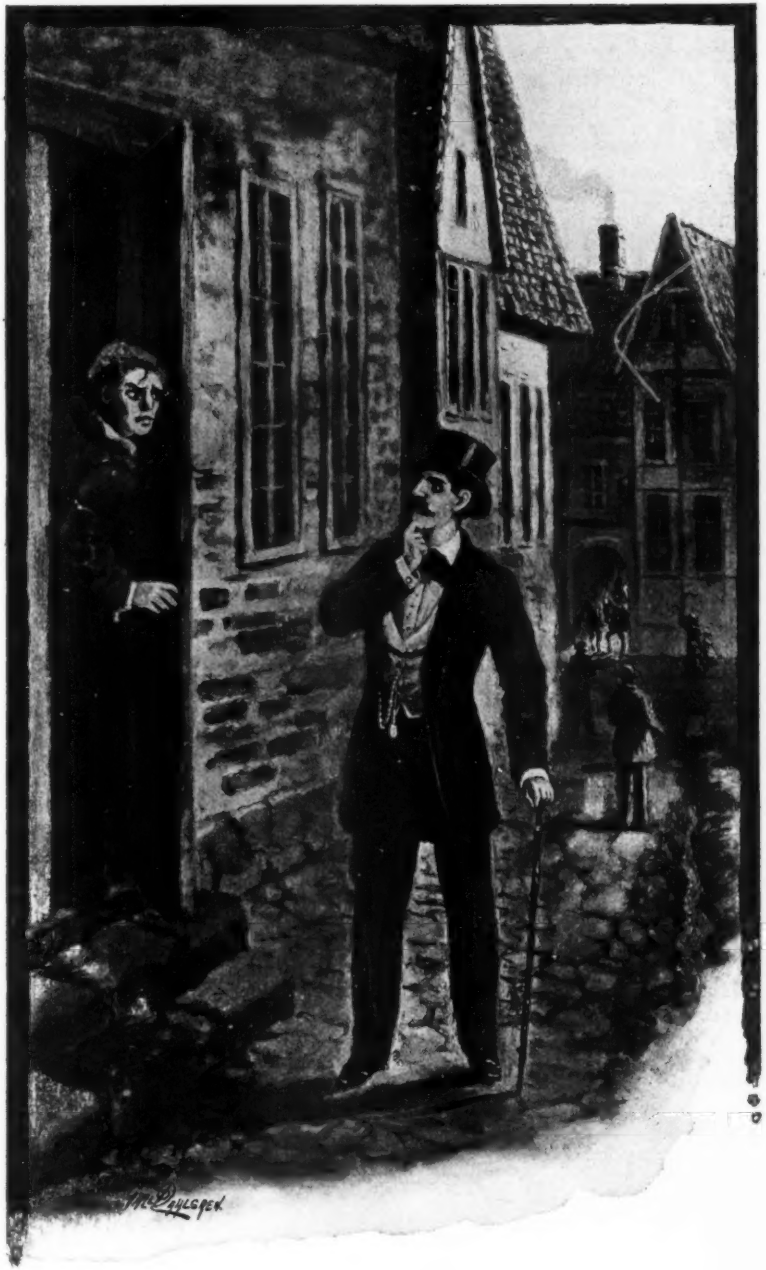
I asked for a further description, and as I had surmised, it was the face I had seen at the window during the night.

We had the host summoned at once and to him I told my story. He avowed, however, that it was utterly impossible for any one to get into the vacant room, since he had locked the door himself no longer ago than the morning of the preceding day, and the key was still in his possession. A gendarme was, nevertheless, immediately summoned, and led by the host, we proceeded to the room in question. The door was really locked, of that there was no doubt; and when, with a great show of courage, but with evident trepidation, the official had finally opened it, there was nothing to be seen, no more, in short, than the candle had revealed the night before; and what we had not been absolutely assured of in our previous examination, the room had no other entrance than the window, which was securely nailed, and could not be moved from either side.

I had the opportunity later in the day, of telling my story once more to the police authorities of the village, who plainly had arrived at a wholly matter-of-fact conclusion as to the manner of my mysterious visit, although they made no pretense whatever of explaining its possibility. My narrative, accordingly, was taken down in all its details by the clerk, and duly signed and attested. My address was also carefully noted, and with the intimation that it might be necessary to summon me as a witness, as one who had seen him after the deed, in case the murderer were apprehended, I was, for the time being, dismissed from the case in which I had played such an involuntary part.

It was, with no small satisfaction that as soon as possible that afternoon we shook the dust of Elbingerode off our feet and set out again on our way, for the episode had not been a pleasant one. The remainder of the foot tour was without important incident, and has left no particular impression. I only remember that even when we were again back in Brunswick, I felt a haunting nervousness at night, but change of scene finally made me forget it, and when in October of that same year, I went on to Leipzig, to enter the University, it was fair to become ultimately, only an indistinct memory.

Most strangely, however, it was not destined to die out, but was revived in a way that has made it all one of the most well remembered incidents of my life. I had been in Leipzig two months, when one day, the 14th of December—the date even has remained in my memory—having taken a longer walk than usual, I was hurrying, late in the afternoon, to my lodgings in the Keil Strasse, through one of the narrowest streets in the older part of the town. I was not quite sure of my direction, and was wondering where the crooked street would lead me, when my attention was suddenly attracted to a man who came to the door of a house just in front of me, and after looking up and down the street, as if in search of somebody or something, had drawn back again into the passage and closed the door behind him. The action in itself was not suspicious, and would have passed unnoticed in a more crowded thoroughfare. It suddenly struck me, however,



A Recognition

that I had seen the face before. I had caught but a momentary glimpse of it, but surely it was not unfamiliar. I stood still to puzzle it out, but all at once it came to me with the certainty of conviction—it was the face I had seen in the inn at Elbingerode!

I quickly decided what to do, and accurately noting the number of the house, I hastened off as rapidly as possible to the *Rathhaus* in the market and told my story to an incredulous official, who only reluctantly at last decided to send a policeman to apprehend the man upon suspicion, in case he should be found. I was asked to accompany the officer to make the identification. To make a long story short, we finally discovered our man in the smallest and poorest room in the very garret of the house. We had learned where he was probably in hiding, and entering the door without knocking, came upon him quite unawares, as he lay awake upon the bed, covered up with the bed clothes to keep himself warm in the fireless room. He was pale and emaciated; his spirit had been broken, apparently as much by hunger as by remorse or fear of apprehension, and he made neither by word nor sign the slightest protest to his arrest. There was, however, not the faintest doubt as to his identity. There were the same wild eyes that had stared in upon me through the window, and across the forehead was the scar that I had seen so distinctly in my terrible vision.

We took the prisoner back to the *Rathhaus*, where the identification was made complete by means of the photographs and descriptions that had been sent out by the authorities at the time of the murder. An examination was set for the following morning, and after my name and address had been taken and my card of legitimation from the University carefully scrutinized, I was told to appear to give my evidence as to the identity of the prisoner at the appointed time.

There is little more to be told. When the next day, I appeared at the department of police, as directed, I was told by the official in charge that there was no further need of my services, for the prisoner had taken the matter into his own hands during the night, and lay dead in his cell. I shuddered as I thought of my own instrumentality in the outcome of the tragedy, though the ground for such a feeling were wholly sentimental and only justice had been done.

I was not yet destined to hear the last of the episode, for in order to secure the reward that had been offered for the apprehension of the murderer, a journey was finally necessary, in the middle of winter, up into the mountains to the little Harz village where the first scenes of the story were laid. What more than made up to me, however, for any discomfort I was obliged to suffer was the satisfaction I had of giving the considerable sum ultimately paid me into the hands of the almost destitute widow, whose support had been so ruthlessly snatched away. At this time I again took the opportunity to look over the ground with the utmost care, and examined once more the door and the window of the still vacant room next the chamber in which we had slept. The window was nailed up, as before, and there was no other possible entrance except by the door which now, as then, was securely locked. From every possible point of view since then, I have thought the matter over, but with no satisfactory explanation; and to this day, ten years or more after the episode, I am still as much in doubt as ever as to what I saw at the window of the Blue Angel of Elbingerode.

Columbia College, New York

AT THE DRY TORTUGAS DURING THE WAR

A LADY'S JOURNAL

(*Commenced in January number*)

[The history of the late war has been well treated in various publications, but that portion relating to the famous Dry Tortugas prison, where thousands of men were kept during the war, and where those connected with the assassination of President Lincoln were confined, has never been described, yet the events are now of great historical value. The island upon which the great prison was established was a sand band comprising but thirteen acres, — one of the last of the keys representing the end of the great Florida reef. For seven or eight years a lady, the wife of one of the surgeons, lived in this isolated spot and viewed all the incidents from the appearance of the first war cloud until the declaration of peace. The following chapters were not written or intended for publication, the events being jotted down simply for friends in the North; and THE CALIFORNIAN has been enabled to give them to the public in a series of chapters, believing that many are of historical interest and value, and also as showing the singular life of a lady in one of the most out-of-the-way spots in this country.]

THE 2d of March, 1862, brought many changes to the Dry Tortugas. A transport arrived with a new regiment — the Seventh New Hampshire — and with orders for the Wilson's Zouaves to be transferred to Fort Pickens, up the Gulf and nearer the seat of actual hostilities. This change of command brought its excitement and the garrison was in confusion for several days.

There never had been more than five or six companies on the island at one time, and there were no accommodations for more, yet here came a full regiment of one thousand men and the question, "Where should they be quartered?" was a serious one. The parade was quickly converted into an impromptu camp-ground; tents were pitched, guns stacked, and, as if by magic, camp-fires appeared with men sitting around eating, their knapsacks serving as tables, or reading the letters they found awaiting them. All were evidently delighted to be on shore even though the island was not larger than one of their fields at home in New Hampshire.

The bastion near our house, into which we had moved a short time previous, was turned into a temporary kitchen for one Company, and the call we heard daily, "Fall in Company I!" may recall to some the mystery and joke that for several days surrounded it.

As they marched up, ninety strong stalwart men, each with his shining tin cup and plate, suggestive of a New England kitchen, they still bore the air of the farm and their rugged hills, despite the gilt buttons and army blue, and we felt instinctively that we need have no further fear of mutiny and that the drilling they would undergo would make them, in a short time, a regiment the army would be proud of.

The scene in the moonlight, looking down from the ramparts upon their white tents among the mangrove trees, was charming, if one could forget that this same picture in another place must later mean a camp-ground with a battle field not far distant, blood, carnage, the whistling of cannon balls and the "zip" of the bullet, and broken hearts and homes.

The regiment came in two detachments, several days intervening. The last steamer ran aground on one of the islands, creating some little excitement in the garrison as the *Union*, a small steamer "wrecked" and brought them in. Colonel Putnam of the New Hampshire Regiment was a descendant of the Putnam's of Revoluntionary fame and looked well worthy the name — a remarkably handsome man of com-

manding appearance, idolized, as we found, by his officers and men.

Following their arrival came exciting news. A steamer arrived, bringing accounts of the fall of Nashville and the capture of ten thousand prisoners and the encounter of the *Merrimac* and *Monitor*, at which enthusiasm among the troops broke all bounds. Much to our regret, the next day, Dr. Hammond and Colonel Brooks took their departure. The companies of the latter's regiment formed a double row for him to pass through, and as he went on board the steamer a salute was fired; then the troops marched up on to the ramparts and stood until the steamer passed out the workmen, who were there also giving him three rousing cheers, while flags were waved. And so we lost our brave "little Colonel."

We were not yet to settle down quietly. The next mail brought orders for Captain Morton to go to the front — a move which delighted him but which was a great blow to us. He was a very dear friend, and it was with sorrow we bade him good-bye, little dreaming that his career was so soon to be ended.

The temporary hospital tent for the regiment was not far from our house, and as it overflowed, my husband offered them half of his engineer hospital outside the fort until they were settled in one of their own. Some of the men were ill on their arrival, having been taken when about half way out from New York.

One day as my husband passed through the ward containing the patients of the New Hampshire Regiment, he saw something that startled him, and calling the surgeon out he asked him what was the matter with his men. The latter replied that they had colds and some fever.

"But what is that eruption?"

"Nothing serious I think," replied the surgeon.

An examination, however, resulted in its being pronounced smallpox.

Our fright for a while was, to say the least, rather in the nature of a panic. The new cases were sent to Bird Key and put in tents; but, fortunately, the disease was confined to the regiment, none of the other men taking it. There were only about forty cases in all and six or eight deaths.

To add to the unpleasantness at this time, we were again put upon a short allowance of water. It would have been a sorry report to send to Washington of fourteen hundred people on a short allowance of water, with smallpox in their midst, confined on that little island and a few barren keys at the beginning of summer. Colonel Putnam sent to New York for water condensers, so that we could have the cistern water for cooking, and was making ready a schooner to send to Havana for water, as they were as badly off in Key West as we were, having only sufficient for twenty-four hours, with three thousand troops besides the citizens, and having already sent to Havana to buy water, when the heavens opened and our cisterns were filled.

When it rained we felt, as some one expressed it, as though we were above the strainer, so solid did it come down. The condensers when they arrived were put in use to fill the cisterns with fresh water in case of fire on the works. It was astonishing how much more water one required when on an allowance.

The steamer *Nightingale*, a gunboat, now came in, staying long enough to give us great pleasure in the society of Doctor R——, who knew so many of our friends that we were soon on the footing of old acquaintances. I remember his bidding us good-bye, one Saturday evening as the steamer was going out to the buoy at night, to start early the next morning. But Sunday morning before we were down stairs we heard his voice calling to us that he had fifteen minutes to spare and he had rowed in to say good-bye again. In those times and with our peculiar environments, we formed strong

attachments, especially if the people came from New England.

That week brought my sister after a long visit in Key West. It was like a bit of home to us and every addition to our circle of ladies, brought new life and pleasures to all. We had a variety of musical talent among the men. The regiment had a band, and there were some excellent performers on stringed instruments among the colored boys who were always ready for a serenade or to go on the water. Our little amusements were good for all. They prevented the officers from being as restless as they usually were when news of victories came and they felt that others were having all the glory while they were idling away their time in this out-of-the-way place.

News was always late and often fragmentary, leaving much that we could not fill in. We heard of the battle of Shiloh and the capture of Island No. 10 in the Mississippi, and on the 6th of May report reached us of the capture of New Orleans on the 25th of the preceding month. The news came the evening that Mrs. A—— was giving a dancing party, and the exuberant spirits of the officers made the affair an unusually pleasant one.

A trip to Loggerhead Key was our longest outing, the farthest we could go and feel within our own domain. The Key which was three miles distant had a fine light-house upon it, and the keeper and his wife always gave us a welcome and possession of the house. The island was a mile long and a little more than a quarter of a mile wide, covered with prickly pear and mangrove bushes. It was a favorite haunt for the turtles in their laying season, and our most exciting expeditions were at those times, for the turtles chose moonlight nights. We took three boats, with music for dancing and supper, making a grand frolic of the occasion.

After supper, enjoyed in the light-house living-room, the ample kitchen was converted into a ball-room and dancing indulged in until it was nearly time for the turtles to come up when, taking our shawls and wraps, we started for the beach. Dividing up into parties of six we stationed ourselves like a picket along the shore, not daring to speak aloud, as the least disturbance would alarm the turtles and deter them from coming on shore.

The nights were superb and so warm and dry that one could sleep with impunity in the open air, if they chose, during the waiting; but the excitement of watching for a ripple, and the gentle splash of the turtle's flippers as she cautiously came in, crawling up over the white sand, stopping occasionally as though listening for an enemy, kept us awake. If the turtle was not alarmed she went up above high-water mark, and with her flippers scooped out a large, round, hollow place, then depositing her eggs, sometimes from two to three hundred; but if she heard the slightest noise, if anyone was so unfortunate as to step on a twig that crackled, the huge creature would turn and make for the water at a marvellous rate of speed. Experience had taught us to be very wary, and if those to whom this sport was new forgot in their excitement that silence meant success they received a sharp nudge or a handkerchief suddenly placed over their mouth, with very good grace.

After the eggs were deposited and covered with sand the turtle would turn and leisurely crawl toward the water, leaving the sun and heat of the sand to act as incubators. Then came our grand *sortie*. Having signaled the party beyond us, we both gradually and silently crept along, until the turtle was on her way to the water, when the gentlemen would make a dash, going between her and the water, to turn her course, if possible, seizing hold of the huge shell to turn it over.

But it was usually a hard struggle, as the sand that could be thrown with

those short awkward flippers was a means of defense that made holding on to the huge creature no trifling effort, for they sometimes weighed several hundred pounds and fought for their liberty with great violence. It would take the combined strength of several strong men to turn one and often after several attempts they failed; one's valor cooled with eyes full of sand, and a blow from one of the flippers was not a gentle pat by any means.

When they succeeded in getting the creature upon her side the ladies were allowed to take hold of the shell as they dropped the animal over on her back so that they could say that they had helped to turn a turtle — a vain imagining, if the truth must be told. As soon as the turtle was on her back she was perfectly helpless, and we could go and leave her for another watch.

On one occasion my companions captured three, while the party on the other side of the island lost two, the big creatures taking them to the water's edge, then breaking away. The captives were so large that the boys were obliged to make two trips the next day to bring them over to the fort, where they were placed in the moat until needed for the table.

After the "turning" we would complete our onslaught by robbing the nest. In dire distress we could make use of the eggs, but not otherwise.

I remember during my first experience in housekeeping on the island, when eggs by their scarcity were a very great luxury, one of the negroes came in one day and asked me if I would like some turtle eggs.

"Are they good to eat?" I asked.

"Oh, yes, Missis; we makes great count of 'em at de mess hall, and dey makes firs' rate puddin'. Aunt Eliza knows how to make it," replied the boy.

"Well," I said, "bring me some to-morrow and I will try them."

The next morning he came up the walk with a bag looking like a bag of potatoes, slung over his shoulder, and seeing me in the hall, came in. With a lurch of his shoulders he swung the bag down on the floor with a thud, remarking as he did so: "Dere is yo' turtle eggs, Missis."

"What!" I exclaimed, "in that bag? they must be all broken."

He laughed, saying, "Oh, no, I guess yo' don' know what kin' er eggs them be. Yo' kin fro 'em ober de house an' dey won't break; dey's tough like leather, yo' must tear de skin fo' it will break."

And then he opened his bag in which was a pile of soft white eggs that would not require a Columbus to stand them upon end or side as they were perfectly round, with a little indentation as though they were not quite full and, consequently, would remain in any position you placed them.

I told Henry to take them through to the kitchen to Aunt Eliza, who was delighted, for there was nearly half a bushel of them, and the colored people were very fond of them. She probably surmised that they would mostly fall to her, and I presume visions of hot supper for herself, Jack and their friends passed quickly through her mind.

My attempt at a pudding was amusing. I had to take the skin — one could hardly call it a shell — of the turtle egg and tear it apart. The contents looked not unlike the egg of a fowl, but the beating was literal and a great deal of it required before the tough matter was reduced to anything like a thin liquid. The milk and spice were then added, and it was baked as a properly prepared custard should be. We concluded, however, that we should give up desserts altogether if we were reduced to turtle eggs; so the people in the kitchen feasted for a week until the bag of eggs was exhausted.

The little turtles when first hatched were the prettiest creatures imagin-

able, so small they would hardly cover the palm of one's hand, and no matter where they were put they would turn and make a straight line for the water.

On the 18th of May, 1862, Captain McFarland was placed in command of the engineer works at Key West and Tortugas that had been in charge of assistants after the departure of Captain Morton. He resided in Key West, making occasional visits to Fort Jefferson.

The men were drilled every day, both in the casemates and on parade, and those from New Hampshire hills were already becoming very soldierly-looking men.

On the 21st a steamer came in with recruits for Fort Pickens, bringing news of the evacuation of Norfolk and the sinking of the *Merrimac*. The *Rhode Island*, which was part of the time our supply ship, was always a welcome visitor, but her range was now from Galvaston to Key West and her calls became less frequent.

On the 14th of June, 1862, a tug came from Key West with an order for the troops to be ready to embark on the morning of the 17th for Hilton Head; it also brought news of the taking of Memphis.

Those three days were sad ones, for with them left Mrs. A—— and Mrs. Colonel L—— with whom we had enjoyed so much. On the morning of the 17th all the ladies were on the piazza at headquarters to see the regiment leave. The Colonel marched them around parade, and as they passed the quarters they saluted us, and then filed down through the sally-port to the tune of "The Girl I Left Behind Me." Company M of the regulars was firing a salute in the casemates, and altogether it was a sad and impressive sight. There were old men, gray and wrinkled, who looked too feeble to march even with only the weight of their knapsacks, while others were in the full vigor of youth, eager for the field. The two departing ladies stood with us, sad-eyed and sad-hearted, for the regiment was going into battle, and the enjoyment of the past few weeks made a very bright background to the uncertainty they saw looming up before them. Even the workmen had asked permission to suspend work, and had assembled on the ramparts above the sally-port, where they gave three cheers for Company M, followed by three for Colonel Putnam and Colonel Abbott. As we accompanied the ladies on board, regretfully saying good-bye, we realized something of the horrors of war which we had not before. We had become attached to the departing men; had watched them as they were transformed into noble-looking soldiers, and appreciated their strength and worth.

The night before they left we had a severe squall that tore the flag over the sally-port literally into shreds. Colonel Putnam, with a possible premonition of his fate, remarked to a lady on whom he was calling, that if he were at all superstitious he should consider it a bad omen. Key West was left almost as lonely as we were, for they took three regiments and three companies from there. Col. Tinelle, with the New York 90th, came in the place of the New Hampshire regiment. Six companies were left in Key West, the remaining four coming to us. It was some time before we became accustomed to the loss of our lady friends, with whom we had been so happy, getting all the pleasure we could out of our limited resources. For example, one day Mr. P——, the engineer, asked Mrs. A—— if she would take a ride. She replied: "Yes, but where is your carriage?"

"Be at the door and I will bring it around," he answered. Soon after he appeared with a tip-cart and the finest mule the department owned. He had put in the cart a chair, over which he had thrown an army blanket. Spreading another over the bottom of the cart, and standing up as did the charioteers in olden time, he drove

Mrs. A—— and Mrs. I.—— across parade, picked up Mrs. R——, my sister and myself, and started on, to the amusement of every one. The mule had become enthused by the frolic, so that it needed nothing but guiding, and the velocity with which we were taken twice around the inside of the fort would have astonished Gilpin himself. Then we were landed at our door, where the dignified doctor, who loved fun as well as any one, could not resist pulling out the pin and dumping us into the sand, as the cart was unloaded of its bricks for the workmen, amid the shouts of those who had rushed out to see the novel sight of ladies riding in a tip-cart.

We were all invited by Colonel Tinelle and the officers to dine with them on the 4th of July, and a very pleasant affair it proved. After dinner we adjourned to the piazza and heard the Colonel deliver a patriotic speech to the soldiers, who were drawn up in line before headquarters. Then we went home for an hour or so, returning for a hop, at which there were present twenty gentlemen and eight ladies. The latter were scattered about so as to look as numerous as possible, and as we had all put on evening dress, some one said they might be deluded into the belief that it was another party. At supper the Colonel called us to order, as he wished to propose that if agreeable, we should celebrate the 4th of July every month.

The history of Colonel Tinelle, which he gave me some time after, was most interesting. He was an exiled Austrian veteran, taken prisoner before Charles Albert ascended the throne, and confined three years and six months, I think, under a death penalty. But when the King died, his son Charles Albert commuted the sentence to banishment with nine other prisoners. Colonel Tinelle came to America, his family preferring to remain in Austria, where they held a high position.

After some years, his sentence was revoked, but his wife advised him not to return, as his position would be unpleasant, and also declined following his fortunes in America, upon which the Colonel showed the communication to the Senate of New York, and was granted a divorce. Some time after, he married an American lady, and was sent as Consul to Oporto, where he resided for fourteen years, his wife dying there, and by a singular turn in the wheel of fortune, Charles Albert died there in his arms. He was in the war in Italy with Napoleon III, who was then a lieutenant They were both together in New York, intimate friends, and corresponded until Napoleon became Emperor; but Colonel Tinelle could not forgive his renunciation of Republicanism. While in Italy, he met his eldest son, who, by the death of his grandfather, had inherited the fortune that should have been his. Later he was appointed Consul to Palermo, but our war came on, and he said it made his old sluggish blood tingle, and he gave the position up to some one who wanted to go abroad, and joined our army with his two sons. He was a kind-hearted gentleman of the old school, and the story of his life was as interesting as any historical novel.

Most of the drilling of the preliminary tactics was on the parade in front of our house, and it afforded us not a little entertainment and oftentimes amusement; we even became familiar with the faces of many of the men. One company of the New Hampshire regiment we privately dubbed the "Veterans." One man was so intractable that he was taken out alone by a soldier for private coaching, and all the morning we could hear, "hep," "hep," which name we finally gave him.

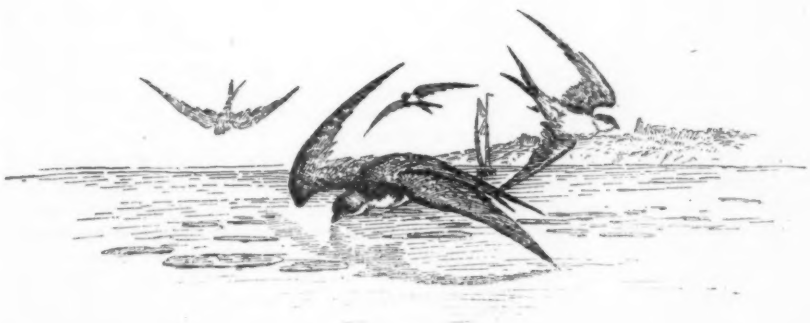
One morning the Colonel was sitting on the piazza with us during this daily drill, and turning to my husband, he said: "I shall leave that man with you when we go away. It is no use; he must be a very old fellow." He

looked at that distance like an old man, well preserved, with black hair.

While my husband was in charge, during Dr. Hoffman's visit to Key West, a forlorn looking old man came to him one day for something, and while he was talking, it gradually dawned upon us that it was "Hep," in his natural colors. The idea that any amount of artificial make-up and dye could have deceived a recruiting officer into thinking he had even a claim to middle age was preposterous. The necessity of appearing young had fled with the departure of the regiment and the thought of that poor old man going through the torture of "hep," "hep," and "double quick," morning after morning, was not so amusing as it had seemed at the time. He was evidently renewing his youth by being able to act himself; but in the cause of his country, I think the name of martyr would be all he could lay claim to. We gave him soups and good things daily from our own kitchen until my sister thought he might, if taken then, learn to "thrust," "parry," "leap to the rear," drills we watched so often when the poor old man was trying so hard to be a soldier.

One day we were watching a company being drilled by a young second lieutenant, who had just joined the service. He marched them straight up to the house as though they were going to storm it. They reached the fence only four feet from the steps and there kept stepping, the young officer in torture, as he could not remember the command that would wheel them about, while we tried to look as though it was part of the discipline for them to stand there knocking their toes against our paling. My husband wanted to help him out, but scarcely dared to whisper the order, and I think some discipline would have gone to the winds, and we, as well as the soldiers, would have laughed outright, had not a sergeant in a low tone whispered the order to the distracted lieutenant, who gave the right command.

(*To be Continued.*)



THE NEW STAR OF 1892

BY EDWARD S. HOLDEN, LL. D.

Director of the Lick Observatory

WHEN any new or startling event takes place in the heavens, the interests of the general public and of the working astronomer are temporarily opposed to each other. The astronomer's only desire is to obtain as many trustworthy observations as possible in order that, *by and by*, he may be able to make them known either as affording a complete explanation of the phenomenon, or at least as throwing some light upon it; while the interest of the public is to have that light and that explanation *at once*. The observations of the transit of *Venus* were over on the even of December 9, 1874, and the very natural inquiry of the reader of the newspaper on the next morning was "Well, the transit is over; what is the value of the solar parallax?" As a matter of fact the answer to this question has only been published during the past year. During the whole of the intermediate time a staff of computers have been working over the data given by the observations, and have but just reached the definitive result.

I have never appreciated the temporary conflict of interests just referred to more vividly than now, when the editor of the *Californian* has asked me to write some account of the new star which has just appeared in the constellation *Auriga*.*

It has been under observation at the Lick Observatory for three nights only at the time of writing this, and while certain very definite conclusions could be and would be drawn from our work up to the present time, if the star should suddenly vanish tonight, yet we intend to wait for many more observations before announcing results, although we can now see certain very interesting differences between the development of this star and the records of the development of former ones of its class. I shall therefore be obliged to content myself with giving a very brief sketch of the history of some of these former stars, and an account of the kind of observations now in progress at Mt. Hamilton and elsewhere.

The accompanying map of the region of the sky near *Nova Aurigæ* will serve to point out the situation of the new star (which will be about ten degrees south of the zenith, and on the meridian about quarter before seven P. M. on March first.)

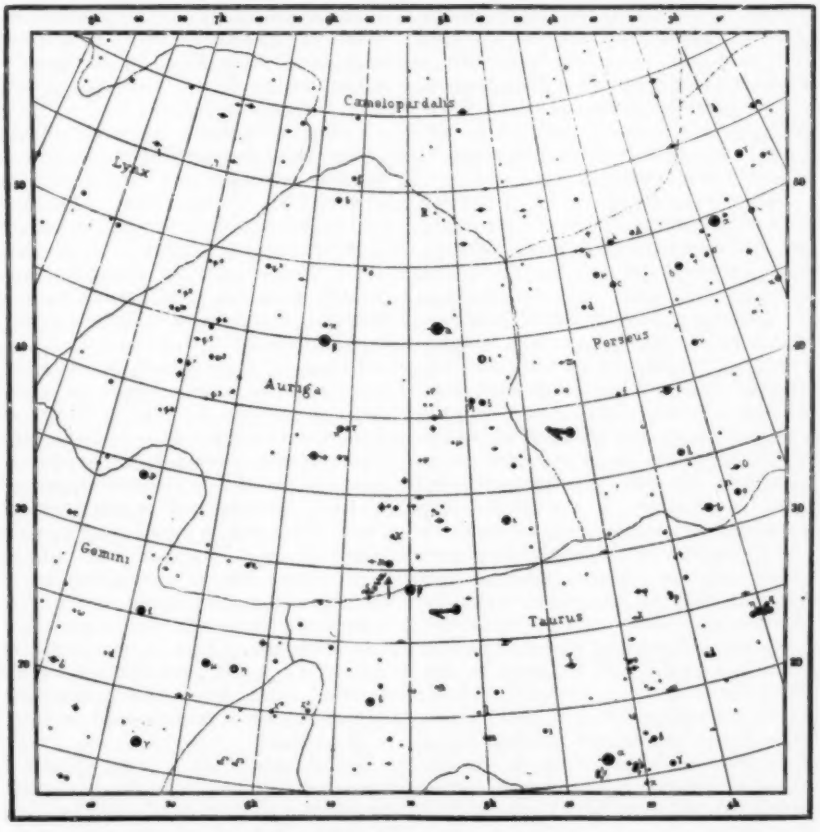
The brightest stars of the map are of the first and second magnitude; the faintest are of the sixth, and are just visible to the naked eye. The *Nova* is (now) about two and a half times as bright as the faintest stars easily visible to the naked eye. To find the star, the reader should first identify the brightest stars of the map, and by means of them, he can orient the map properly. The fainter stars can then be located, and finally the new star.

By a "new" star is meant one which has not before been known, and which is now so bright that it surely would have been included in former catalogues of stars had it always been of its present brightness. This distinction is necessary, for it is impossible to look into the large telescope at Mt. Hamilton without seeing *many* stars which are "new" in the sense that they have never been seen through other telescopes on account of their faintness. In 1843 a complete list of all the stars in the northern hemisphere visible to the naked eye

*Right-Ascension, 5 hours 24.9 minutes; declination, *north*. 30° 23'.

was made by Argelander, and there is *no* star in the place of *Nova Aurigæ*.

Moreover a complete list of every star of the northern sky visible in a small telescope of about two inches aperture (including *all* stars down to the 10th magnitude) was published in 1859 the by observatory of Bonn. This *Durchmusterung* contains some 300,000 stars, but there is no star in the place where this new one now is. The recent photographic charts made at Harvard College observatory show no star (I believe) in the situation of this *Nova*. Therefore we may say that the *Nova*, which is now of the fifth magnitude and easily visible to the naked eye is certainly *new* as a fifth magnitude star, and it deserves the name, even if we refer only to stars as faint as the tenth magnitude or fainter. *Some* star, *some* nebula, *some* mass of matter there must have been in its present situation. This mass may formerly have been self-luminous—a star or nebula therefore—but so very faint as to have escaped the enumeration of the *Durchmusterung*, etc.; or it may not have been self-luminous at all; it may simply have been a mass of matter capable of reflecting light, but not of emitting it:



Map showing Situation of the new Star Nova.

a *dark star*, in short, like our own earth, for example. We know that such bodies do exist in the heavens, and in spite of the fact that they are invisible, we know quite a good deal of their motions and even of their masses. This is, however, "another story," and the fact is cited here simply to show that there are analogies to support the supposition that this *new* star may have been, only a few weeks ago, merely a dark mass of matter quietly pursuing its regular path in space, and apparently destined to remain forever unknown to inquisitive mankind.

Some tremendous event in the history of this mass of matter has lately occurred by which it has suddenly been turned from a dark body into a very brilliant one. Let us suppose, for example, that it formerly was a real normal star of the 14th magnitude. It would not have been catalogued in any of the charts we now possess. Such a star (14th magnitude) is about the *minimum visibile* of a telescope of nine inches in aperture. It may have been *seen* by quite a number of observers using telescopes of nine inches in aperture and upwards; but it would not have called for any special remark and notice among the thousands of similar objects of the same class. It suddenly has increased in brightness from the 14th magnitude (let us say) to the fifth; that is it has increased in brilliancy something like 3,300-fold at the very least! From one of the most insignificent objects, only to be detected in a powerful telescope, it has suddenly taken its place among the lucid stars.

There are millions and millions of stars as bright as the 14th magnitude; there are only a few thousands visible to the naked eye.

We do not know the efficient cause of this mighty change. We can obtain a rough conception of it if we recollect that the chief difference between two objects so utterly dissimilar as the sun and the earth is one of temperature. If the earth were suddenly to be raised to the temperature of the sun, the spectra of the two bodies would be very much alike, and an observer distant from both of them would then regard them as objects of the same class though of very different sizes. It may assist us in comprehending the phenomena presented by new or temporary stars to read a few paragraphs from Miss Agnes Clerke's admirable work, "The System of the Stars (1890)" as follows:

"The brightest sidereal object known to us by authentic description was the "stranger star" in Cassiopeia, observed by Tycho Brahe. He first saw it Nov. 11, 1572, but it had already been noticed by Lindauer at Winterthur, November 7th, and Marolycus entered upon its systematic study at Messina, November 8th. From equality with Jupiter it rose in a few days to be the rival of Venus, showing to keen eyes at midday, and at night through clouds thick enough to obscure every other star. After about three weeks, however, it began to fade and in March 1574 disappeared finally. Its color was at first dazzling white, then for a while ruddy, and from May 1573 onward, pale with a livid cast. Rapid scintillation distinguished it throughout. There is no reason to suppose its outburst other than solitary. The appearances in the years 945 and 1264 connected with it by a Bohemian astrologer named Cyprian Leowitz, were almost certainly apocrypal.

The "new" star (designated 'B Casseopeia') can still be perceived smoldering in the spot where it once blazed. Tycho's measurements, reduced and discussed by Argelander, located it within one minute of arc of a reddish, eleventh-magnitude star, first noticed by d'Arrest in 1865, the character of which, as disclosed by the observations of Hind and Plummer in 1870–74, fully warrants the inference of its identity with the famous 'temporary.' Not only is it variable to the extent of nearly a magnitude,

but it frequently seems nebulous, with occasional lurid flashes of momentarily increased brightness. Its non-appearance in the photograph taken by Mr. Roberts January 12, 1890, showing above 400 stars where d'Arrest charted 212, may be due to the actinic feebleness of its light.

With the spectroscopic study of temporary stars, a fresh chapter in our knowledge of them opened. Through the magic of the prism, more was ascertained as to their essential nature in five minutes than could have been learned in as many centuries with the telescope alone. On May 12, 1866, Mr. John Birmingham, of Millbrook, near Tuam in Ireland, was amazed to perceive an unfamiliar star of the second magnitude shining in the constellation of the Northern Crown. On May 16, the application of Dr. Huggin's spectroscope showed the object to be wrapped in a mantle of blazing hydrogen. Five bright lines (three of them due to hydrogen) stood out from a range of continuous light broken up into zones by flutings of strong absorption. The incandescence of a star was hence largely atmospheric and for the rest, from the rapid rate at which it fell away, could have been only 'skin-deep.' That the compound nature of its spectrum testified truly to an immense diffusion of vaporous material in its neighborhood was certified by Dr. Huggin's visual observation of a singular glow round the star on May 16 and 17. Athough its light decreased by a daily half-magnitude, and its color changed from white to orange, no alteration took place in the character of the spectrum. The bright rays, however, faded somewhat less promptly than the continuous light.

The visibility of the object to the naked eye lasted only eight days, and already, in the beginning of June, it had sunk to the ninth magnitude. Its slow subsequent decline was interrupted by fluctuations, thought by Schmidt to be periodical in about ninety-four days. When observed by Vogel, March 28, 1878, it was of the tenth magnitude, and gave me an ordinary stellar spectrum. Virtually, it had resumed the conditions of its existence when Schönfeld entered it as of 9.5 magnitude in the 'Bonn *Durchmusterung*.' Its leap upward to the second magnitude, involving a *thousand fold* gain of light, was accomplished with extraordinary suddenness. Two hours and a half previously to Birmingham's discovery, Schmidt surveyed at Athens the constellation in which the blaze was about to occur, and noticed nothing unusual. He was certain that the star could not have been as bright as the fifth magnitude.

The name of 'T. Coronae' was bestowed upon it in conformity with Argelander's system of nomenclature, by which the variables in each constellation are designated, in order of their discovery, by the Roman capital letters from R onward. Only stars otherwise anonymous, however, are included in the distinctive series thus created, so that many variables are still entitled in the ordinary way by Greek letters.

The stellar apparition that ensued after ten years was, in some features, the most remarkable of all. Dr. Schmidt noticed at Athens, November 24, 1876, a star of the third magnitude near P Cygni, in a spot till then vacant so far as recorded observations went. The weather having been cloudy during the previous four days, there was no possibility of tracing the steps of its ascent, but it ran down very rapidly, and ceased to be visible to the naked eye on December 15th. Its changes of color pursued an inverse order to those of its predecessors. From golden yellow it turned white, and eventually bluish."

The history of such objects is always something like the foregoing. It will be evident that the question of the interpretation of the spectroscopic observations of such stars is quite too technical to be entered upon here, involving as it does a discussion of the

unsettled problem of the relation of the age of a star to the nature of its spectrum and the equally unsettled question of the cause of variability in stellar light, etc. It will be best, in this hasty account, to leave all such matters to one side with the remark that the experts are by no means agreed upon them, and that the general answer to the inquiry "what then *is* the cause of such phenomena as variable and new stars present?" must be, at present, "we do not know." The subject is a new and most difficult one. It is impossible to experiment in our laboratories on matter in such conditions of temperature, etc., and observers are obliged to record the phenomena as they present themselves, and to painfully piece together the significant facts towards constructing a satisfactory explanation in the future.

There is no reason to doubt that such an explanation can be and will be reached in time.

Perhaps the most generally interesting proceeding will be to give an idea of the nature of the observations which are now in progress at Mount Hamilton with the object of accumulating sufficient and adequate data for future discussion. In the first place the new star *may* disappear, therefore photographs of the star with other surrounding stars have been taken, so as to fix its place in the sky, and its position has likewise been determined by visual observations. We now know where the star was in the sky in the early part of February, 1892, and if it changes its situation (which is not likely) future observations will decide how much it has changed. The star *may* be near enough to us to be subject to those very small, periodic, annual changes which mark a sensible parallax. To settle this question photographs of its neighborhood will be taken with the great telescope on the first available night which is not windy. There is no doubt that the *Nova* will vary in brightness.

To register its variations in brilliancy, comparisons of its light with that of a neighboring star of about the same magnitude are made by the naked eye, and photographs are regularly taken every few hours which give its brilliancy in terms of the light of the pole-star taken as a standard. These photographs reduced by methods which have been devised at Mt. Hamilton will give a perfect account of the light variations of the *Nova*, and they will be continued throughout the significant portions of its history.

Variations in its brightness will undoubtedly be accompanied by variations in the character of its spectrum. The visible portions of the spectrum have been (and will be) studied with the spectroscopes of the 12-inch and of the 36-inch telescopes.

These visual observations are made at Mt. Hamilton, under very favorable conditions, and it is likely that they will be as valuable as any which can be secured. The portion of the spectrum which is not easily *visible* (to the eye) has been regularly photographed also, with excellent results.

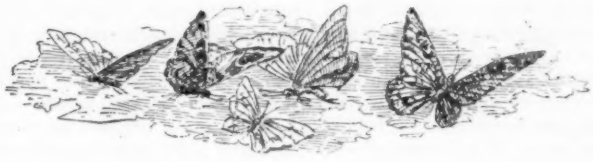
On February 8th, 9th and 10th, the visual and photographic spectroscopic observations combined have fixed the places of some 50 different bright lines and bands. The place (wave-length) of each of these has a physical meaning and will be of importance in deciding upon the chemical constitution of the star; and the changes in this spectrum will throw light upon the nature of the physical and chemical changes which are taking place within its atmosphere. The motion of the star towards or from the earth (if it is in any way considerable) can also be deduced from such observations.

The foregoing short account will give some idea of the processes by which it is sought to gain the data, which are desired from this very remarkable appearance. I am extremely glad to say that the Observatory now possesses nearly all the instruments and apparatus which are

needed for this research. If the star had appeared a couple of years ago, we should not have been ready; and I do not think I can very well convey a conception of the pressing need we now feel for two or three small additions, costing in all less than a thousand dollars, which would help us amazingly, if we only had them, but which we cannot now afford. There is a rough piece of glass in Pittsburg (I believe it is the only one now in the United States) that would be of the greatest use to us now, if it were only made into a prism really suitable for photographing this spectrum, and there is a mate to it in Europe waiting for us to obtain the few hundred dollars necessary to buy and fit it for the same use; and there are a few pieces of brass work waiting to be done and paid for with money that we have not got. When our needs of this kind (and they are not large) are really known, I feel sure that they will be provided for, and I speak of them now, because it is in cases of this exceptional kind that we feel them most sharply.

But our present facilities are ample for us to obtain excellent and valuable results, and it will be, I hope, evident that we are not neglecting our opportunities. I think that we shall certainly be able to give a good account of this few star at the end of its apparition.

Lick Observatory.



JOHN G. WHITTIER

BY ELIZABETH GRINNELL

Dear human mountain peak serene and high
Above the snow-line of the height of years;
We, on the lowlands at thy feet look up and sigh
Lest, growing whiter still, and piercing yet the sky
Thy form be lost through falling mists of tears.

Pasadena, Cal.

THE LABOR QUESTION OF THE PACIFIC COAST.

By John Bonner.

IN March last Mr. Samuel Gompers, the head of the American Federation of Labor, visited the Pacific Coast; on his return he reported that labor was better organized there than anywhere in the Eastern States. There are reasons why this should be so. The labor movement on the Pacific started from a vantage ground which Eastern organizers of labor did not enjoy. From the first the latter had to contend against a long-established system of low wages and long hours of labor. On the Pacific the workman had to deal with a market in which the price of labor was inflated. All that he had to accomplish was to prevent a too rapid decline in wages caused by an influx of competitors from outside. The Atlantic Coast workman had to raise wages and diminish the hours of labor in the face of constant and copious immigration from Europe which he could not stop; the Pacific Coast workman's task presented no such formidable obstacles.

Until the exhaustion of the mines on the Comstock, labor in California always commanded three or four times the wages it was worth at the East. But when that event occurred a change took place. From 1878 to 1881 California was about the worst place in the United States for a mechanic to try to make a living. These were years of general prosperity in the Eastern States, the depression of 1877 having been followed by an absolute boom in business. But on the Pacific Coast all was gloom. A new constitution, which was proletarian in its main features, was adopted in 1879, and the raids on property which it attempted to license frightened capital out of the State. A political party with agrarian purposes had arisen, under the name of the Workingmen's Party, and seemed to aim at a policy of confiscation. For the time it arrested development. The mines had ceased to produce. The railroad stopped work on its extensions. Building was checked. Enterprise was paralyzed. And the natural consequence followed in a cessation of the demand for labor.

But it is the happy fate of California to be rich in resources, so that when one fails others rise to take its place. It was discovered that, though the Comstock and the placers were practically no more, the State was a producer of wheat, wine, wool, fruit and oil. A number of unemployed men drifted into the rural counties, and got work on farms. Others migrated north and found employment in the forests which clothe the banks of the archipelago of Washington. Others moved south into Arizona, where a great railroad was in course of construction, and got work in tracklaying or mining or cattle-herding. Some returned to the East. By degrees the surfeit of labor in San Francisco was thus relieved, and early in the eighties equilibrium was restored. First timidly, then confidently, workmen began to demand the old wages, and after a time employers acceded to their demands. Then the labor element proposed to intrench its position by organization.

At that time several unions were already in operation. The San Francisco Typographical Union was organized in 1872. The Brotherhood of Locomotive Engineers had a branch on the Coast as soon as the Pacific railroad came in. Early in the sixties a Miners' Union was established in Nevada with branches in California. In 1867 the Ironmolders' Union was established; it was reorganized in 1878. The Journeymen Tailors formed their union in 1873. The Barbers'

Union dates from January, 1878. It was in the same year that the unions of the Boiler-makers, the Iron Shipbuilders, and the Caulkers were founded. The Draymen and Teamsters established their union in 1876. The Gas-blowers' Union was formed in 1877. The Plasterers had formed a union in 1865, and the Shipwrights in 1868. A number of other organizations of labor were formed after 1880, some of which survive to this day.

It is difficult to keep count of the labor organizations of California. As a rule, the formation of unions, like their by-laws, is kept a secret. Some unions appear to have been dissolved very shortly after their formation; others to have consolidated with cognate organizations. Early in 1886 some of the more active unions banded themselves together and formed a Council of Federated Trades, in which every regularly constituted union had a right to be represented by delegates. Unlike the corresponding institution in Australia, the Council of Federated Trades does not seem to have the power to order a general strike; but it may order a boycot of employers who fall under its ban, and it may call upon the unions represented in the Council to contribute money to support the members of a union which is on strike. The reports of the strength of the Federated Trades Council at different periods vary widely. On April 12, 1886, a committee of the body certified in writing to Governor Stoneman that it represented "fifty-four independent organizations." Later in the same year the Commissioner of Labor, who had access to the official records, reported that there were thirty unions which sent delegates to the Federated Council. On November 1, 1887, a published report made by the officers of the Federated Trades gave the number of unions represented in their body as twenty-one. On October 1, 1888, the Commissioner of Labor reported that, out of eighty-one trades unions in San Francisco, seventeen only were represented in the Council. In July, 1891, the outgoing President of the Federated Trades stated in his annual report that twenty-two unions had joined the Council during the year; and it has been alleged on semi-official authority that the total number of unions represented at the time he made this statement was thirty-seven.

It is evident that the organization is loose; that unions are born, and die unperceived; that some of them join the Federated Trades, and then secede for reasons of their own; and that, in view of the reluctance of the officials of labor unions to furnish information to the public, any estimate of their strength must rest chiefly on guesswork. It is supposed by those who watch labor movements closely that there are some sixty labor unions in San Francisco at present, with an average membership of about eighty each; but this is mere conjecture. This is independent of mutual benefit societies, building and loan associations, endowment associations, and fraternal societies.

Among the trades which have unions, besides those enumerated above, may be mentioned the Bakers, Brewers, Brakemen, Boot and Shoe Makers, Bookbinders, Butchers, Bricklayers, Confectioners, Cigar-makers, Coopers, Candy-makers, Carpenters, Coast Seamen, Furniture-makers, Cooks and Waiters, Harness-makers, Horseshoers, Longshoremen, Musicians, Painters, Pattern-makers, Plumbers, Pressmen, Paviors, Stevedores, Firemen, Teamsters and Woodcarvers. Each of the unions has a set of rules, prescribing the conditions under which members may work for employers, and the wages they must demand. In some of the unions, the rules as to pay are minute and elaborate. The Tailors' Union, for instance, sets a special price on every job of work from sewing a straight seam to finishing a buttonhole; and the merchant tailor is compelled to comply. There are in every trade a few mechanics who do not belong to the unions, and who are called "scabs;" but they do not constitute a force

sufficient to enable an employer to rely upon them to man his shop. He must perforce employ union men, and submit to their rules.

How well the unions have succeeded in maintaining the price of labor on the Pacific Coast, the following extract from a table which was lately compiled by ex-Commissioner of Labor Tobin will show (Report of 1887–88, page 147):

WEEKLY WAGES IN VARIOUS COUNTRIES.

Occupation.	California.	New York.	Illinois.	Germany.	France.	Italy.	England.	Ireland.
Bricklayers	$30.00	$20.00	$24.00	$4.21	$3.74	$4.20	$7.56	$7.22
Carpenters	21.00	14.00	16.50	4.11	6.20	4.00	7.66	6.97
Masons	30.00	18.00	24.00	4.07	5.33	3.60	7.68	7.47
Plasterers	30.00	18.00	27.00	4.43	6.34	5.04	7.80	7.12
Bakers	18.00	7.00	12.00	3.50	5.48	4.00	6.17	6.53
Blacksmiths	21.00	13.00	15.00	4.00	5.81	3.60	7.37	7.07
Draymen	15.00	10.00	12.00	3.96	5.57	1.50	5.37	4.26
Printers	20.00	13.00	. . .	. . .	6.64	4.60	7.17	8.52
Stevedores	24.00	12.00	18.00	5.70	6.72	2.00	8.44	5.40
Tailors	18.00	12.00	15.00	4.00	5.18	2.20	6.38	5.45

The discrepancy between the market value of skilled labor in California and its value elsewhere might be accounted for if the cost of living were higher in the Pacific than in the Atlantic States. But in fact it is less. Food of all kinds is abundant and cheap; the mildness of the climate minimizes a workman's expenditure for clothing and fuel; rents are, perhaps, higher in San Francisco than in the suburbs of Chicago and New York, and dry goods and manufactured goods, which the resident of the Pacific Coast must get from the East, are dearer. But every other necessary of life can be obtained for less money in San Francisco than in New York.

One is lost in admiration of the ingenuity with which, under these circumstances, the labor organizations of the Pacific Coast have defeated the operation of natural laws, and maintained wages at double or treble the Eastern or European level. It is one of the most astonishing incidents in the history of industry,—one of the most brilliant triumphs that organized labor ever won. The monopoly was established in the teeth of difficulties which must, at the outset, have appeared insurmountable.

When the labor unions undertook to establish that monopoly, and to prevent competition in the market which they intended to reserve for their own members, they had to guard against three risks: an influx of labor from the Eastern States, a flood of labor from China, and a fresh supply of labor from natural increase among themselves. It seemed inevitable that Eastern mechanics would flock in droves to a State where wages were double what they were getting, and the conditions of life more agreeable; that of the four hundred millions of Chinamen who inhabit a country where raw labor is a drug at fifteen cents a day, some at least would come to better themselves on the east coast of the Pacific; and finally that, in time, the sons of the members of the unions would grow up, would compete with their fathers for work, and would eventually break down the monopoly. These three dangers the unions clearly discerned. They provided against them with a skill which seems marvelous. The details are replete with dramatic interest.

The Eastern door of the California labor market was, in the first place, barricaded with literature. The Pacific Coast unions made it their business

to saturate the East with letters and articles going to show that California was no place for a working man. Every union in the Atlantic States was supplied with accounts of the suffering of unemployed men in San Francisco in the winter of 1878, and was left to infer that the situation was unchanged. At times articles were inserted in friendly papers on the Coast, abounding in the same sense; these were scattered through the labor centers in the Eastern States with such assiduity that it became an adage at Pittsburg and New York and Boston, —"Whatever you do, don't go to California." The prevalence of this opinion, coupled with the cost of a journey to a remote and unknown country, indisposed most workmen to cross the Rocky Mountains. If there were any who were not to be frightened away, or who knew the real facts, they were subjected to other treatment. They learned on arrival that they must belong to a union in order to get work.

In most trades a union man will not work by the side of a non-union man, or "scab." When newcomers applied for admission to a union, their case was considered from the point of view of their numbers. If there were but one or two of them, and no more seemed likely to follow, they were admitted on payment of the usual inauguration fee. But if there were a number of them, or if they seemed likely to be the pioneers of a migration, they were quietly told that there was no room for them on the Pacific Slope; that they had better return whence they came,—at the cost of the unions if they were "broke." In these cases strangers found it impossible to gain admission to the unions, and impossible to get work without admission. Stories are current of savage assaults on Eastern mechanics who moved to the Coast, and persisted in remaining there contrary to the advice of the unions. The methods which Charles Reade abolished in England by describing them are not unknown on the golden shores of the Pacific. The lot of an Eastern mechanic who comes to San Francisco and tries to get work here in spite of the unions has lurid aspects.

Eastern mechanics being barred out, the Chinese remained to be handled, and they had to be dealt with differently. Chinamen began to arrive in California in the placer days, and for twenty years they worked side by side with white men with little friction. In 1868 a grand banquet was given in San Francisco to the Chinese merchants; the Governor of the State was present, and delivered a speech in which he welcomed the Orientals to California. Chinamen marched in Fourth of July processions, carrying dragon flags. A few members of races which had in their day been victims of persecution and ostracism railed at the Heathen Chinee; but people generally were quite willing to give the stranger a fair chance. This went on until dullness crept over the labor market, when it occurred to the labor unions that if, by appealing to race and religious prejudice, the Chinese could be driven out, it would be an easy and effective way of getting rid of competitors who might become unpleasantly numerous. Californians are like other people; the instinct to 'eave 'alf a brick at a man because he is a stranger is as strong among them as in other races. So when Dennis Kearney got upon a bench on the sandlot, and proclaimed that "the Chinese must go," the audience applauded; and at the close of the fervid oratory of the Pacific Coast Demosthenes many a man bought himself a piece of rope to hang Chinamen with.

Why not? They had no friends. They had no votes. They did not wear American clothes nor speak the American tongue. It was agreed on all hands that their testimony on oath was unreliable. White juries paid no more attention to it when it was contradicted by the evidence of a white man than a jury of Southern gentlemen paid to negro testimony before

the war. They were an eminently safe object of persecution; the most timid editor and the most double-faced politician could rail at them with no fear of consequences. Persons outside of the labor unions did not care whether they went or stayed; but the unions were keenly alive to the gain they would derive from their exclusion.

It seems strange that, in the hope of securing the electoral vote of California, both parties should have been willing to pass an Act which acknowledges the inability of men of our race to contend against the Chinese on equal terms, and that the broad admission should have been made that the Anglo-Saxon and the Celt and the Teuton cannot hold their own against a semi-barbarous race, which is incapable of acquiring any of the higher branches of knowledge, and can never master a craft requiring anything beyond manual dexterity and the merest rudiments of reasoning. The Exclusion Act had not even the poor excuse of being a measure of protection to American labor against the pauper labor of Asia. Chinese cheap labor has always been a myth. The Chinese know the value of labor as well as any race, and exact the uttermost farthing for their services. In the orchards and vineyards of Southern California they are more serviceable workmen than the Whites, being better able to stand the climate, and they ask and get as good or better pay. Of the 65,000 Chinamen now in California, some 20,000 live in San Francisco, and are chiefly engaged in domestic service. A competent Chinese cook gets $35 or $45 a month, and makes half as much more by the percentage he receives on the house supplies he purchases, the perquisite being no secret, but a matter understood all round. The "second boy," who corresponds to the housemaid of the East, and makes beds, sweeps rooms, waits on table and answers the doorbell, gets $25. Both are boarded and lodged; and, though the Chinese are supposed to live upon rice, the Chinese servants in San Francisco expect hot meat twice a day, and have a pretty taste in pork chops and wings of duck.

For all this the unions insisted on the Exclusion Act; and, no one—except a few men of principle—caring to oppose them, it took its place on the statute book, and organized labor on the Pacific Coast was barricaded against competition from the West as well as the East.

The only remaining peril was from the growing generation,—the sons of members of the unions. If they grew up and learned their fathers' trades, the monopoly would sooner or later be seriously menaced. To maintain wages effectively, the young men must be barred out, like the Eastern mechanics and the Chinese. The son must go hungry in order that the father should feed. How to accomplish this the Miners' Union, one of the oldest organizations on the Coast, had pointed out. Its plan was very simple. It adopted a by-law that the rate of pay for underground men should be $4 per shift, regardless of age, experience or ability; thus, if a superintendent allowed a lad to go into a mine to learn the trade under his father, he was bound to pay him the same wages as the father. The rule had the effect of preventing the miners' sons from learning a trade, and of compelling a large proportion of the young men of Virginia City and other mining camps to grow up without means of support, which involved their drifting into evil courses; it also prevented the working of mines containing low-grade ore, which might have been exploited with labor at $2.50 or $3 a day, but could not afford to be handled with labor at $4. But the by-law fulfilled its purpose. It protected the Miners' Union from the competition of the rising generation.

One of the oldest labor unions in San Francisco, the Ironmolders, was quick to follow the example set by the Miners' Union. It adopted a rule limiting the number of apprentices in any one shop to one for each eight molders and one for the shop. The example

was contagious. The Bag and Satchel Makers' Union refused to allow more than one apprentice to every six journeymen. The Bricklayers restricted the number to two for each employer. The Caulkers set the limit at one to each boss. The Cigar-makers allowed one to each ten journeymen, and one for the shop, but no shop could have more than three in all. The Coopers allowed each member of the union to have one son work under him as apprentice. The Glass-blowers forbade more than one apprentice to every fifteen journeymen. The Hatters would not allow over two apprentices to any shop. The Pattern-makers allowed one to every four journeymen. The Stonecutters set the limit at two to each yard. The Woodcarvers allowed one to every six men, and one for the shop. The printers of morning papers were restricted to one for every fifteen journeymen; printers of evening papers, one to every ten journeymen; printers of weekly newspapers, one to every five journeymen.

The remarkable fact that labor on the Pacific Coast commands twice or three times as much money as it does in the Eastern States or in Europe, while living costs less, may now seem less inexplicable than it at first did to the reader. The machinery which has been described accomplished its work, and defeated the operation of natural laws. It was a wonderful feat,—a victory which reflects credit on the cunning of its authors. The story recalls the record of the ancient European guilds; but, to be sure, under those close corporations, young men often took to the highway because the guilds would not let them earn an honest living.

It is not to be supposed that the despotism which the unions thus succeeded in erecting was established without friction and conflict. Its victims rebelled often and earnestly. From the renaissance of labor in 1883 to the present time strikes and boycots have been of constant occurrence. A glance at one or two of these will illustrate the situation.

In the early months of 1885 the wages of an ironmolder were $3 a day. The men struck for an advance, and on the 8th of June of that year the foundries agreed to pay $3.25. Two years afterward they struck again and were again successful; on August 8, 1887, the wages were raised to $3.50. Encouraged by these victories the union adopted rules modifying the internal economy of the shops, and taking their management, in small details, out of the hands of the owners to place it in the control of the union. Some of these rules, designed to benefit the workmen, reduced the profits of the employers, and handicapped them in their competion with Eastern foundries for supplying castings for buildings and other constructions. In 1889 the oppression of the unions became so unbearable that the foundries formed an association on their side, and agreed to resist the next demand of the union, and to stand by each other. The conflict came, over a trifling detail, in the foundry of Steiger & Kerr. These founders had observed that some of their workmen turned out fifteen and sixteen pieces from one pattern, while one or two others, who were slower workmen, only turned out twelve. They handed a pattern to one of their best men, and to their surprise they found that he also only turned out twelve. They passed the pattern to another, also a first-class molder, and he in like manner only turned out twelve. Struck by the coincidence they inquired the reason, and were told that the union had adopted a rule that, when a pattern was passed from one man to another, the second man shall not exceed the amount made by the first. This was establishing the slowest and most inefficient man's work as the standard for the shop. The founders called their association together, the offending molders were discharged, and a general strike was the result.

The contention of the molders was that their men should be reinstated on the old terms, and the rules of the

union obeyed by the founders in every particular. The contention of the founders was that they would have nothing more to do with the union, nor recognize it in any way. They claimed the right of managing their own business, and of employing whom they pleased, whether union men or non-union men. They declared that thenceforth they would employ as many apprentices as they chose, and would adopt such regulations for the government of their shops as they thought proper. They announced that they contemplated no reductions in wages, but merely intended, as it was their money which was at stake, to control its employment.

The conflict was bitter. The shops were manned with non-union labor, and skilled labor imported from the East; but work was conducted under circumstances of great difficulty. It became necessary to lodge and feed the workmen in the shops; their lives would not have been safe had they walked the streets. Though a large force of police patroled the surroundings of the foundries, at least a score of men were attacked by the strikers and cruelly beaten. To save the life of one of his men, Mr. Kerr was compelled to shoot a striker dead. He was promptly arrested, tried and acquitted. A quantity of iron and steel work which was required in California, and which would have been done in San Francisco but for the strike, had to be sent East. Valentine, the President of the Molders' Union, boasted that the strike had delayed the construction of one of the cruisers, lately built at the Union Iron Works, by several months. In the mean time, about 180 skilled mechanics, many of them with families, lived on one dollar a day for months,– the money being contributed by sympathetic unions. The end, which was obvious from the first, came at the end of twenty months; the strikers surrendered, and the founders won a complete victory.

In this case the issue was not a question of wages or hours of labor; the question involved was whether the unions or the owners should run an industrial enterprise.

Another interesting controversy, in which wages and hours cut no figure, was the conflict between the working shoemakers and the shoe-manufacturers. In the spring of 1885 the Boot and Shoe Makers' White Labor League complained that their members were unable to live in consequence of Chinese competition, and the Labor Bureau was moved to investigate their grievance. It appeared that there were in San Francisco about 1,200 working white shoemakers. The number of Chinese shoemakers it was impossible to ascertain. The league estimated them at a couple of thousand; but the testimony showed that a quarter of that number would have been nearer the mark. As California has always been a producer of hides, it is not surprising to find the annual output of boots and shoes prior to 1885 estimated at $5,000,000. It was shown in the testimony taken at the Labor Bureau that the Chinese cannot make an expensive shoe, or a dress boot, or a lady's shoe, or even a first-class miner's boot. Their product is confined, exclusively, to cheap, coarse shoes, such as laborers and farm-hands wear. Mr. Isaac Hecht of the firm of Buckingham & Hecht, one of the largest manufacturers of boots and shoes on the Coast, testified that there were less than 250 Chinamen employed by white manufacturers in San Francisco, and, so far from their blocking the way for white shoemakers to obtain employment, there had been no time in the past year when a competent white shoemaker could not have obtained work in his shop.

Notwithstanding this, the White Labor League demanded the immediate discharge of all Chinamen employed in White factories, and this being refused ordered its members to strike. The strike was productive of serious and unexpected consequences. San Francisco had been for years the chief source of supply for boot and

shoe dealers, not only in California, but likewise in Arizona, New Mexico, Western Texas, Colorado, Utah, Nevada, Montana, Idaho, Oregon, British Columbia, and the Islands. These dealers, apprised of the strike by telegraph, and apprehensive that it would prevent their orders being filled, duplicated them to manufacturing centers in Massachusetts. The trade on the Coast was demoralized and partially transferred. In 1876 the receipts by rail of boots and shoes at San Francisco from Eastern points were 49,321 cases; and this was about an average before the labor troubles began. In 1886 they were 73,076 cases; and, the trade accommodating itself to the new demands, in 1889 there were 120,594 cases, besides 24,891 cases brought in by sea.

The fight ended in the strikers begging to be taken back. But the industry had received a blow from which it has not yet recovered; and, of course, the journeymen have suffered with the bosses. Unprofitable trade has led to renewed contention, and this has proved so aggravating that one manufacturer named Murr, whose factory occupied four large buildings which he filled with workmen, has removed his plant to Vermont, where, as he says, people will not worry him about the color or the religion of his men. Other manufacturers talk of following his example. Mr. F. S. Chadbourne proposes to leave the State with his plant.

A precisely similar case was that of the Cigar-makers. In this country, the trade of cigar and cigarette making is generally monopolized by Poles and Germans, Hungarians, Russians, Croats and Slavs. Americans rarely take to it. Chinamen do, and become very expert. In the fall of 1885 the "White Cigar-makers' Union" of San Francisco besought the Labor Bureau to investigate the cruel hardships which were inflicted upon their members by Chinese competition. Commissioner Enos viewed the subject from the standpoint of its political possibilities, and proceeded to institute inquiries. He found that San Francisco had been producing some 3,000,000 cigars weekly, which were supplied to every part of the Coast. He denounced the employment of Chinamen in so high and holy a calling, and advised that every cigar hereafter made by gentlemen from Poland and Hungary should bear a label stating that it was the product of white labor. Strange to say this did not increase the consumption of the output of White factories, nor diminish the use of unlabeled cigars. Then the White Labor League offered to replace the Chinamen who were at work in the factories with white men. The manufacturers closed with the offer. But curiously enough the European cigar-makers who were said to be starving in consequence of Chinese competition could not be found. The League then offered to import white men from the East; that also was satisfactory to the manufacturers. Accordingly, some four hundred men were imported by the "White Cigar-makers Union" at considerable expense, and were received on their arrival by a procession with a brass band, and bearing a transparency on which a Polish gentleman with a monstrous foot was depicted in the act of kicking a Chinaman out of the country. Of the four hundred newcomers, two hundred and forty were found incompetent, and were sent back forthwith; of the remainder the bulk were seduced by the attractions of the orange groves and fruit orchards to leave the city, and disappeared from public view. The end was that the members of the White Labor League had to sue for readmission to the shops, even though Chinamen worked beside them.

But it was their destiny to discover simultaneously with the shoemakers that the machine of commerce is delicate, and when thrown out of gear is not easily repaired and set going again. The news that the cigar-making industry of San Francisco had been disorganized by labor disputes soon spread throughout the region which had been in the habit of drawing

its supply of smokables from that point, and dealers began to look elsewhere for stock. Eastern drummers swarmed over the slope from Vancouver to Tucson, and even to El Paso; and when the Hungarian and Polish gentlemen concluded to pocket their pride, and to work in a room which was contaminated by the presence of a Chinaman, they found that the manufacturer had been compelled to curtail his force in consequence of the falling off in his sales. The number of cigars made in California in 1884 was in round figures 151,000,000; in 1889 it had fallen to 133,000,000, a decrease of 12 per cent. The value of the stamps sold by the Government for cigarettes was, in 1881, $12,930; in 1889 it was $1,728. The falling off is heavier than can be explained by the reduction in the internal revenue on tobacco products. In a vain attempt to crush the Chinese the shoemakers and cigar-makers had taken the bread out of their own mouths.

Meanwhile the frequency of strikes, and the gradual encroachments of the unions upon the rights of employers, have induced the latter to organize for self-defense. On August 25th a meeting of representative business men was held in the Board of Trade at San Francisco, and a temporary organization was effected. The meeting was held with closed doors, and none of the speeches have been reported. But it is understood that the policy which the organization proposes to pursue will be defensive, not aggressive.

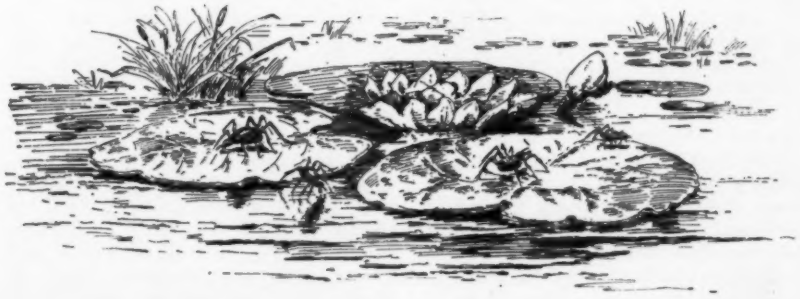
Both employers and workmen will doubtless study the labor strike which began in Australia in August, 1890, and did not end till November. That was a sympathetic strike, the bodies chiefly concerned having no interest in the dispute which caused the strike; and the extent to which it spread arose from the plenary powers intrusted to the Trades and Labor Council, which corresponds to the Council of Federated Trades in San Francisco. The California Council has the power to order a boycot, or a contribution from unions in aid of strikes; but it has no power to call out a union, while the Australian Council has. In Australia the fight began over the discharge of a seaman from a coast steamer. The Federated Seamen's Union took up his case, and failing to obtain satisfaction appealed to the Trades Council, which called out in succession the Seamen, Draymen, Stevedores, Miners, Sheepshearers, and almost every other organized body of workmen. Every kind of business was brought to a standstill. No ship could be loaded, no sheep sheared, no fuel obtained for cooking or for gas, no coal mined, no food moved from place to place. Merchants were seen driving their own drays, with a policeman on each side for protection. A Queen's ship running in for coal had to land her marines to cover the bluejackets who carted the coal to the landing place. At nightfall business stopped, and everybody went to bed; for the streets were wrapt in darkness. Vessels lying in port under charter to carry coal to San Francisco had to sail in ballast.

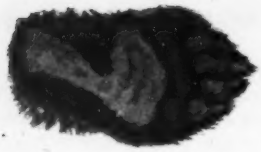
The strikers had plenty of money, and plenty of sympathy. A bishop and a chief justice openly espoused their cause in the papers. They had the best counsel to advise them. But they utterly and completely broke down. The very completeness of their organization was the cause of their undoing. When a strike takes place in San Francisco effort is made to confine it to the union immediately concerned. The other unions keep their men at work, and they support the strikers. In Australia every union was involved in the strike, and no one was earning money. The consequence was that when the treasuries of the unions were emptied and the savings of individuals were exhausted the strikers were reduced by famine. The striking miners made a feeble attempt to prevent the reopening of the mines by non-union crews; but the appeance of a few troops with gatling guns afforded them a graceful opportunity of confessing their defeat, and retracting. As for

the members of other unions, they simply resumed their individual sovereignty, and went to work without consulting the unions.

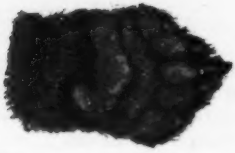
The strike was perhaps one of the most extensive and the gravest that has taken place in our day. It involved the greater portion of the population of the two leading provinces of Australia,—Victoria and New South Wales. When it began the treasuries of the unions were overflowing with money, and many of their members were independently rich. People felt so certain that labor was going to score another triumph that the most eminent members of the bar offered their services gratuitously to the strikers, and some of the most eloquent divines addressed their meetings with earnest words of approval. Yet, as Mr. Champion told them, they were bound to fail, and in failing to inflict a blow on organized labor in Australia which will leave it bankrupt in purse and heart for a generation.

Lawmakers and politicians are timid in dealing with organized labor unions because they fear that a vigorous enforcement of the law will be punished at the polls. It is the popular belief in political circles that members of unions can be relied upon to revenge their wrongs—real or imaginary—when election day comes round. It was to secure an opportunity for vengeance that the labor organizations throughout the country coerced a score or more of State Legislatures into adopting the so-called Australian Ballot system. But, in fact, experience does not confirm the notion that workmen vote as their unions bid. They seem to reserve that portion of their sovereignty for themselves. It is believed that there is not a single instance in American history in which a public man has been consigned to private life by reason of his opposition to the usurpations of the unions, though many men have closed their public career by playing the demagogue as champions of labor. At the election of 1890, in San Francisco, the Federated Trades Council scrutinized with infinite care the tickets put forward by the opposing parties, and marked certain candidates as enemies of labor, to be voted down. Their success was not up to their expectations. President Fuhrman, in the address he delivered after the election, stated: "We regret, exceedingly, the disastrous defeat the Council has suffered in its political boycots. Of all the candidates placed under the ban by the Council, only one was defeated."





BRUIN



BY THEODORE M. COPELAND

Few hunters outside of the books show an over-weening desire to meet Bruin in his own domain. In fact, it is said that the difference between the verdant sportsman and the experienced hunter lies in this very question. To the green hand the bear hunt offers every inducement, while the old stager, who has made many a plantegrade bite the dust, as the saying goes, is quite content to let the heavy berry-eater roam at large, unmolested, so long as he does not step beyond the borders of propriety.

"I shall never forget my first experience with a bear," said a companion with whom I was enjoying a hunt in the Southern Sierras. "I was young and ready for anything, and a fairly good shot so far as home experience would go, but I had never killed anything larger than an Adirondack deer, many of which I had brought down by the hypnotizing aid of the jack light. The vagaries of fortune brought me to California, and one fall found me prospecting with several others in a fine cañon that wound away up into the Sierras like a green river. I need not explain to you the charm the life has, as you know it. We were on the borders of the desert on the northeast slope of the mountains, and proposed leaving our horses at the entrance and making a day's trip up the different forks of the cañon. The day we started was a typical California one. The morning was as clear as a bell, and found us climbing up the rocky bed of the arroyo. As we went along, the cañon narrowed, and as we looked up, there was the rich blue of the heavens, outlined by the borders of the cañon, seemingly like an azure river flowing along. The sides of the cañon were richly wooded. Great white sycamores pushed their way up through the polished bowlders of the little stream. The fragrant bay gave out its incense, while high up the rich manzanita leaves gave a dark, rich tint to the cañon walls.

"We had gone about two miles when we came out into an opening or amphitheater, above which an old trail could be seen, and here we halted while an Irishman whom we had brought along was sent up to see if the trail was in a good condition for the horses. Taking a pick, he started on while we laid down on our backs in the grass, lighted our pipes and watched him. For a few moments he disappeared, then came out into view, circling around until he was sixty or seventy feet above us. All at once we saw him stop, then another form rose almost beside him, and the next moment our Irishman apparently plunged off into the cañon, while where he stood was a gigantic grizzly. After the first leap, the man disappeared, but we followed him by the waving of the cedars and wild lilac, in which the victim seemed bounding along, and such, in fact, was the case, as he shortly came to a standstill in a thick bunch of greasewood, slipped to the ground, and with a yell of terror at a rock that came rolling down, dashed down the remaining descent, and came into our improvised camp pale, breathless, *sans* coat, *sans* trowsers, or at least a part of them. Seeing that he was all right, a roar of laughter greeted him, which did not appease his injured feelings, and as soon as he gained his breath he told his story. He was walking along the trail with pick and shovel over his shoulder, looking down into the cañon when suddenly, without warning, he came face to face with a huge grizzly and two cubs, who were coming down the trail.

Utterly paralyzed with amazement they faced each other for a second, then he turned, and the bear sprang forward, striking him with one big paw so powerful a blow that he was fairly lifted from his feet and hurled into the cañon where he rolled down through the underbrush as stated, followed by rocks and stones, which

Thrown from the Trail by a Grizzly

he believed to be the bear and family following him. A more demoralized man never lived, and it was some time before he could be tempted to go on with the party, and it was the last time he ever went on as an advance guard.

"In the old times," continued my companion, "bears were very common along the Sierras, and sometimes they ventured down near the settlements. I well remember hearing a noise one night in my bee ranch, and going out I found a big grizzly nosing about, overturning the hives, and enjoying himself with the plunder. I ran back to the house for my rifle, and when I returned I almost stumbled over the old fellow, who now rose up with a growl, and stood for a moment in the clear moonlight, holding one beehive under his shaggy arm, while the other hung ready to roll me over. Yes, I dropped him with a single bullet, and avenged my bees by tanning the hide in full view of their hives.

"To give you an idea how common bears were in the old days, it was no unusual thing for fifty or sixty to be seen around the great stock ranches in a night, and my father has often told me of the sport in which he often indulged at the expense of the bears. I recollect his telling me of an experience at San Francesquito ranch, in what is now Santa Clara County. There was a large stock ranch, to which the bears came down in great numbers, and it was the custom of the young men to get up what they termed bear parties, which consisted in nothing more or less than in riding among the bears on horseback and lassoing them. The bears were not all vegetarians, and were attracted to the slaughter houses of the ranch, and on the night in question about a dozen of the young vaqueros of the county had made preparations for the sport, each having three horses apiece. It was a bright moonlight night when they stole out, mounted and rode out into the country.

"A shout soon told of Bruin's discovery, and riding in the direction of the sound, a big black ball was seen rushing along in the moonlight. Then the sport began. The object was to get as many lassos around a bear as possible. The first vaquero would hurl his reata about Bruin's neck, the animal standing up, growling fiercely, endeavoring to bite the rope, then making a savage dash at the horse. All this time the horses were dashing about, the men shouting with laughter, as the lassos whirl through the air and missed their mark. Soon another reata was slipped over the hind leg of the now enraged animal, and with horses pulling in opposite directions, the big creature was rendered completely helpless and forced along, aided and abetted by other riders until finally it was dragged near the house and killed, when the horseman would turn to join another party that had perchance secured still another bear. In this way a party of good vaqueros has in the course of a single night caught thirty or forty bears in the old days. Often the catch was not made without serious accidents. Bruin would sometimes chew off the reata, and rush at the nearest foe, and in one case the horse fell and the savage animal made sad havoc before it was killed. The picture of a big bear standing upon its haunches, waving its paws in the air, striking at the reatas, now pulling this way, then falling upon all fours to dodge the flying ropes, was most exciting; even the horses seemed to enter into the sport, though their horror was not always well concealed.

"The bears were not always killed, some of the most ferocious being tied up for another sport much in favor in old times, namely, bull and bear baiting. An announcement of a duel between these two animals always drew a crowd, and I well remember the last one I ever saw. It was at Tia Juana, the town below San Diego, that was almost washed away in the freshet of two years ago. The bear was a savage fellow that had been caught a few days previous, while the bull was equally famous for his supposed unrelenting disposition. He was a black, glossy beast, well kept, his hide shining like satin, while his little eyes rolled upward, showing their whites in a way altogether unpleasant to look upon. All the gallants and hunters of the vicinity were present in the seats arranged about the corral, and in the center stood the bull pawing the ground, throwing dust aloft that partly fell on his back and was carried away by the breeze just setting in from the sea. Finally every thing was ready, two bars were pulled up from an adjoining pen annexed to the corral and a big, gray grizzly shambled in, casting sly glances all about. A roar of applause greeted him, and the bull that was gazing in the other direction stopped and looked around in astonishment. One glance was sufficient. He whirled and uttering a moaning, drawling cry, ominous in its import, began anew the pawing,

Roping a Bear

hurling clouds of dust in the air to the distress of the ladies. The bear walked slowly around the ring looking askance at his enemy as if mentally sizing him up, and then quick as a flash the bull lowered his sharp horns and came on with a vicious rush. The bear was equal to the occasion and was on his feet in an instant, and as the bull reached him he slipped to one side, rolling over, dealing the bovine a terrific side blow that brought the blood streaming down his sides. A bellow of rage came from the now enraged animal and amid a roar of applause he turned and again made a magnificent rush. This time Bruin seemed to realize that he must face the charge, and whether he did or not the fact remains. The bull struck him fairly and squarely below the fore-arm, throwing him to the ground; a growl of rage and agony came out of the dust, and as it cleared away it was seen that the bear was trying some of the tactics for which he has long been famous.

"Its powerful fore-paws were about the bull's neck in a warm embrace, while its savage teeth were imbedded in the throat of the larger animal that was held to the ground as if by a bull dog. The bull roared in rage, tossed his head in the air, backed off, then lunged down on his enemy again, finally, in a last effort shaking him off. So far the bear had evidently the best of it, and slouched around the ring licking his chops, glancing up at the shouting Mexicans, who, like the old Romans, would have pointed their thumbs down had the occasion offered.

"The blood of the bull was up, however, and he soon returned to the contest which was continued without issue until the fight was called a draw."

Shooting a Bear

Bull and bear fighting is by no means obsolete on this coast. Several such contests have been seen during the past two years in this State.

My own experiences with the grizzly have been uneventful, though on one occasion I came near paying for my over caution and my friend nearly lost his life. We were hunting on the Coast Range, that even now is a *terra incognita* to many, and one night found ourselves far upon the range with the valleys lying below us and the ocean stretching away in

the distance. We slept under the bushes, and during the night I fancied we had company, and the next morning proved it by the presence of several big footprints, telling of Bruin. We determined if it was possible to follow him up, and in less than an hour we found indisputable evidence that we were well upon him. We were following along what was evidently a deer trail or something of the kind, when suddenly my comrade who was ahead stopped short and fell back upon me. I looked over his shoulder, and there was the biggest grizzly I ever saw, and the moment his cunning pig-like little eyes rested on us, he rose on his haunches. My friend moved a step to his left, intuitively to give me a chance, and we both dropped our rifles, aimed for the heart and fired on the second. It was all done so quickly that I think we were amazed, as the bear, instead of falling heavily, seemed to settle down. Gradually its huge form drooped, then its paws, and with blood oozing from its nostrils, the big head fell over, and the game was ours, so we thought. I remarked, "Well, that was quickly done," and perhaps for the first time in my life I did not throw the shell out of my rifle and recharge. My friend took out his hunting knife and stepped forward, and we stood by the side of the old fellow, perhaps five minutes, discussing how we should skin him. My friend wanted the skull, and stooped down to pry open the mouth, when, like a flash, the bear raised its head and seized him by the face, putting its teeth fairly through the jaw and crushing it. For a second I was dazed. My friend sent the knife he still held into the bear's neck, and at the same time I pumped several shots into the brute, which gave him his quietus, then picked up my companion, who, to make a long story short, almost bled to death and was disfigured for life. I learned that morning that there is danger in a dead bear.

There are two kinds of bears inhabiting American forests—the black bear (*Ursus Americanus*) and the grizzly (*Ursus horibilus*), though almost every old hunter will prove to his own satisfaction that the cinnamon or racer is a totally different species; but the verdict of science is that all the other kinds are but varieties, there being no specific difference between the brown and black bears. The black bear is found over a wide area in this country, from Maine to Georgia, and west to the California mountains. He ranges up to 500 to 600 pounds, is omniverous, and by no means the vegetarian so generally supposed. The mating time is in October, and by the first of December, as a rule, the female at least is safely ensconsced in a den, in which she sleeps or hibernates during the winter, coming out with two or four cubs in early spring in a sorry and altogether ferocious condition, thin, lank and

Skull of Grizzly

dyspeptic from the long fast. When the bear goes into this sleep, it is in good condition and very fat, so that during the hibernating period it to all intents and purposes lives on its fat, all its functions being at a standstill, even its temperature being so low as to create the impression that at this time the bear is a cold-blooded animal. In former times there was good bear hunting where the city of Oakland now stands, and over the entire State they roamed at will, but the settling up of the country has driven them back into the mountains, so that to-day a bear is almost as rare in California as in Virginia.

PRESBYTERIANISM IN CALIFORNIA

BY REV. ROBERT MACKENZIE, D. D.

THE rush to California in early days was not all for gold. The men who came did not lay aside, so much as is supposed, the principles of good morals. Although many expected to stay in California but a short time, they strenuously endeavored to mark that time with what makes for industry, intelligence and religion. That less is known of these efforts than of the other phases of early California life results from the constant fact that in this world the material is always more noisy and more noticeable than the moral. This is a kingdom that seldom comes by observation. As in the midst of the migrations of miners from camp to camp there were those with longsighted faith in what the country was to be, who chose some fruitful valley and bent to the task of making it a farm or an orchard, and so planted the seed from which is growing the permanent prosperity of this State, so, too, there were those who thought of the school-house, the church, and philanthropic institutions, not as an after thought, but on the very threshold of their advent to these shores. Their planting was not in vain. Immediately there appeared the "blade," in these days appears the "ear," and in due time will appear the "full corn in the ear." Whatever may have been the expectation of only temporary sojourn which once characterized the minds of people here, it has given place not only to permanent abode, but to enthusiastic attachment to this fruitful soil and sunny skies as a home and a country for themselves and their children. It requires time even here to make large fortunes; scarcely is the sweat yet dry on the brow of those who first made them. But being made, and the mind at liberty to contemplate the possible uses to which to apply them, more and more they are being consecrated to the furtherance of the best interests of California. There is an impatience, not altogether unnatural, when these home interests seem to be forgotten or ignored. At the same time the eyes of those in the older parts of our country were not exclusively turned upon the material interests of this new land. In quiet and constant ways encouraging help came from the East to assist in establishing the philanthropic institutions of California. That some return should be made in the days of our prosperity is only another illustration of one good deed evoking another.

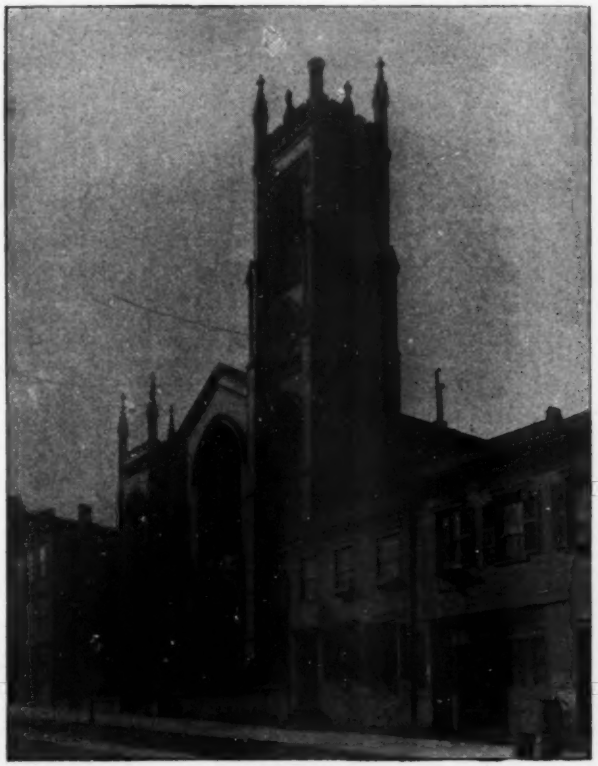
THE FIRST CHURCH OF CALIFORNIA

On the threshold it has been said: this is illustrated by the history of the different branches of the Christian Church, particularly by the Presbyterian branch; not that any marked pre-eminence is thus claimed for it, but rather that a place is claimed for honorable emulation and co-operation with others, all aiming at the same good of this commonwealth.

As early as February 1, 1849, the Rev. Albert Williams, then of Clinton, New Jersey, received a commission from the Presbyterian board of missions to proceed to California to lay the foundation of church work. On the fifth of the same month he took his departure on board the steamship *Crescent City*. Among the many fellow passengers he found some of the same faith, who told him that whereas they were going to California for gold they were desirous of securing and retaining there that which is better than gold. Aboard that ship on Sunday, February 11, 1849, between the Islands of Hayti and Cuba he met them for public worship. At that

service they resolved on two things: "not to lose their religious attainments, and not to do work on Sunday;" a resolution in the main well kept. And there, it may be said, was gathered the First Presbyterian church of California.

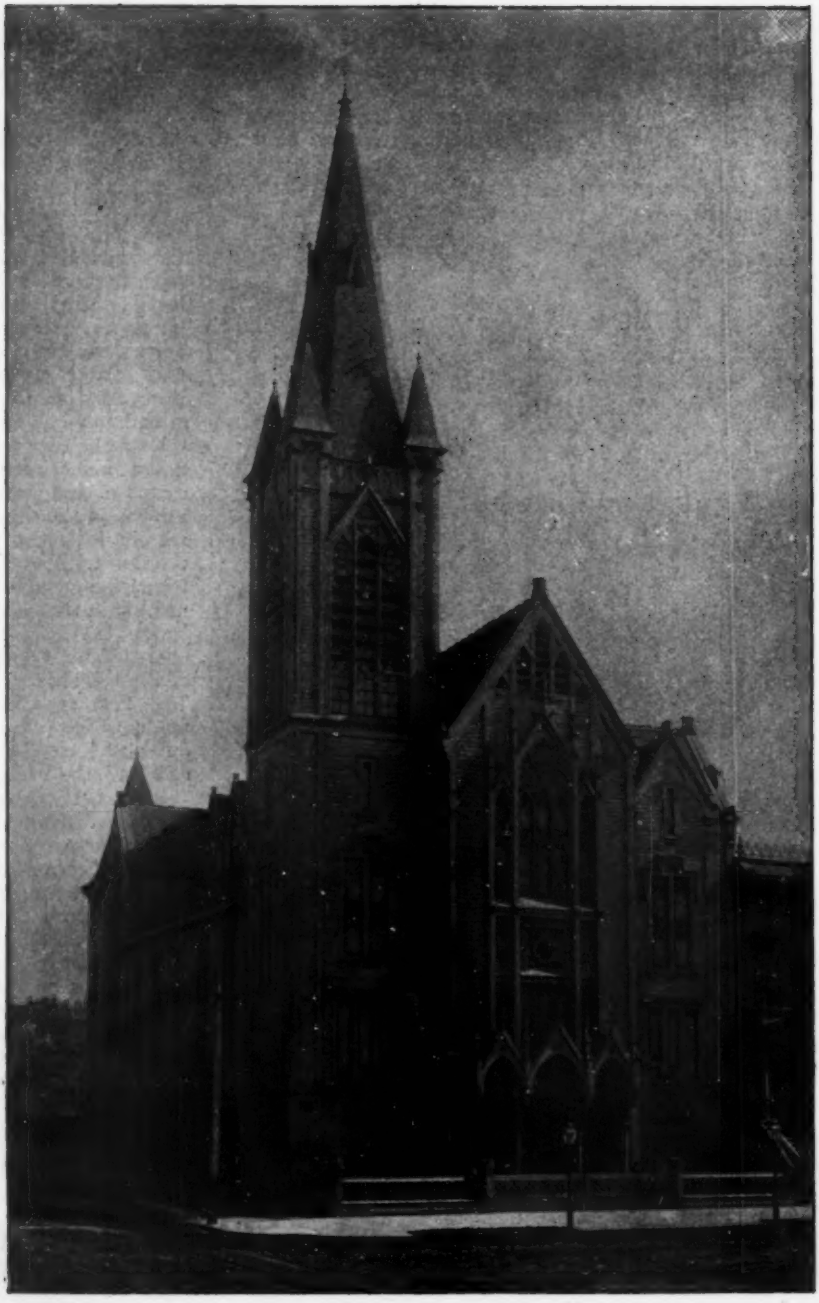
Mr. Williams arrived in San Francisco by the steamer *Oregon* on April 1, 1849. Going immediately to Benicia, then a busy centre, he found that the Rev. Sylvester Woodbridge had arrived by the first Pacific Mail Steamer *California*, a month earlier, and had already made the necessary prepapations for constituting a church, and there on April 15, 1849, they founded the First Presbyterian church, which was also the first Protestant organization, on the soil of California. Returning to San Francisco Mr. Williams organized the First Presbyterian church of that city on May 20, 1849, in the public schoolhouse, on the southwest corner of the plaza. The original members were the following: W. W. Caldwell, Geo. F. Turner, Frederick Billings, Mrs. Sarah B. Gillespie, Mrs. Margaret A. Geary, Mrs. Ann Hodghton. With these were associated as attendants on the Church services many names still active and well known in the commercial interests of the Coast. Among the earlier members uniting in 1849 was Judge W. B. Almond, of the "Court of First Instance." The first superintendent of the Sundayschool was Elder W. W. Caldwell.



Presbyterian Chinese Church

A tent, the property of a disbanded mining association being offered for sale, was purchased by the church. It was erected on a lot then lately secured on Dupont between Pacific and Broadway streets, on Saturday, and occupied for worship on Sunday, August 19th, 1849.

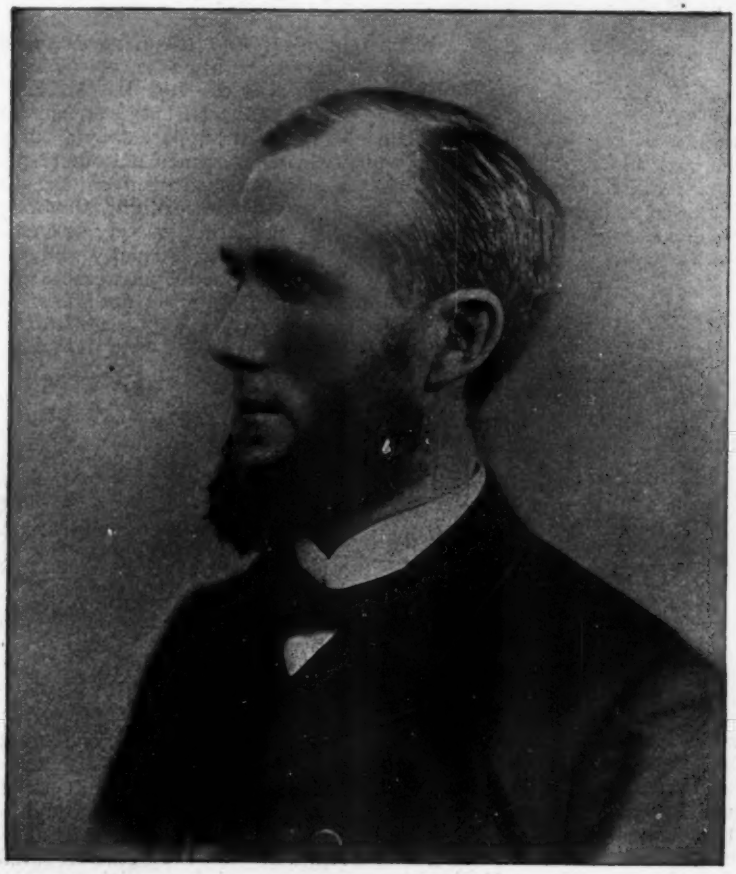
Mr. De Witt, one of the gentlemen who assisted, in its erection, being bantered on his religious zeal, played the old Adam and said he did it for his wife's sake. His interest went further, however, and he surprised the church by informing them that



First Presbyterian Church

he had ordered from New York a church building, which duly arrived in November, 1850, and was erected on a lot on Stockton street, between Pacific and Broadway. This was the first Protestant church building of the usual ecclesiastical form erected in the city; it seated 750. At the dedication, 32 ladies were counted present, the largest number of women ever before collected in one place of worship in San Francisco. This building was burned in 1851, the last of the general fires that repeatedly swept the city in those early years.

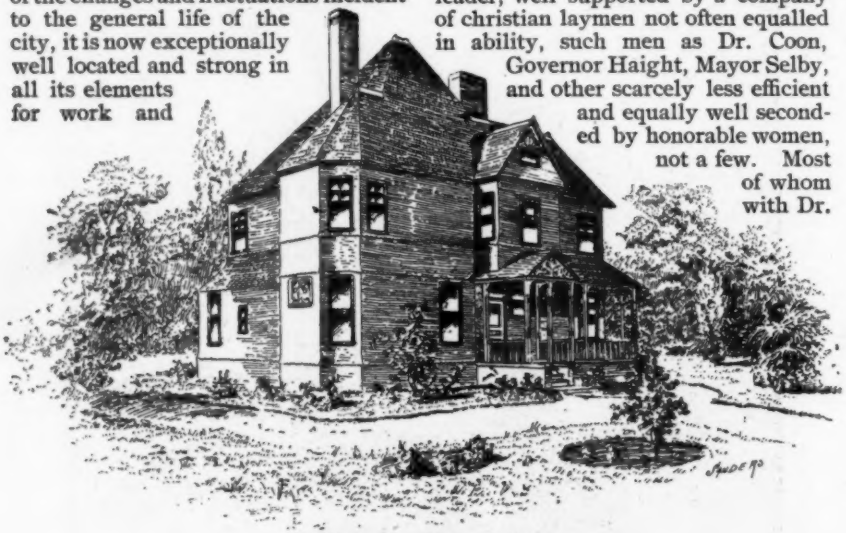
Mr. Williams gives an account of the first marriage ceremony conducted by him. Elder Caldwell had noticed in the tent a young man rather attentive to a lady, and suggested to him the wisdom of marrying her. "Can't afford it," was the answer. "I shall see that the ceremony shall not cost you anything." They were married. Frederick Hathaway and May Elizabeth Smith, the minister receiving from the groom an ounce of gold as a fee. With a few subsequent changes the congregation was at last housed in the fine building on Stockton, near



Rev. Robert Mackenzie, D. D.

Washington street, now occupied as the First Chinese Presbyterian church. There they were served by such men as Dr. Anderson, Dr. Eells, Dr. Dodge, and Dr. Patterson, men of national fame. In November, 1883, the congregation moved to Van Ness avenue and Sacramento street, where they are now served by the Rev. Robert Mackenzie, D. D.

This is the mother Presbyterian church of San Francisco. Partaking of the changes and fluctuations incident to the general life of the city, it is now exceptionally well located and strong in all its elements for work and worship. A goodly family of thrifty children has grown up from this center.



The Montgomery Professor's House

In 1851, Howard Church was formed by Dr. Willey, now principal of the Van Ness Girls' Seminary. Among his successors was that genial genius, the Rev. Henry M. Scudder, D. D., who has left his mark for good on this community more deeply than many others. Although but five or six years in that church, and now twenty years since he left it, it is still better known as Scudder's church than by its own proper name. At present, it is ably served by a young man of that sturdy Scotch-Irish fiber that has done so much for Presbyterianism in this country, the Rev. David H. Irwin. Among other laymen, two in particular stand out in preëminence in the history of that church, Wm. A. Palmer and Samuel I. C. Swezey.

Calvary Church was formed by members and friends from the First Church, on July 23, 1854. Their first pastor was the Rev. W. A. Scott, D. D., LL. D., an able and aggressive leader, well supported by a company of christian laymen not often equalled in ability, such men as Dr. Coon, Governor Haight, Mayor Selby, and other scarcely less efficient and equally well seconded by honorable women, not a few. Most of whom with Dr. Scott himself have gone to their reward.

Calvary was first built on Bush street, where the Mercantile Library until lately, was situated, and was removed to the central location, now occupied, on the corner of Geary and Powell streets. The Rev. Dr. Wadsworth, one of the ablest preachers ever on this coast served this church some years, and was followed by the Rev. John Hemphill, D. D., another Scotch-Irishman, who for 11 or 12 years served as pastor, raising Calvary

church to the leading position in the city and State. The present pastor is the Rev. Thomas C. Easton, D. D. On Dr. Scott's return, after an absence of a few years in Europe and New York, St. John's Presbyterian church was formed. It is now on the corner of California and Octavia, in a commanding position ably served by the Rev. Henry C. Minton, D. D.

From time to time other Churches were formed, until to-day there are 15. Prominent among these are the Westminster Church holding what is the geographical center of San Francisco, Rev. J. Q. Adams, pastor, now arranging for the erection of a new building, and Trinity Church towards the Howard Street church towards the extreme end of the "Mission." The pastor of the latter, the Rev. J. C. Smith, a young man of vigorous energy, has just led them in the work of erecting what is one of the best church buildings of the denomination in the city. It is a remarkable fact and unique in the history of cities that with one exception among the older churches, and one in the course of construction, all these churches are out of debt. This is largely owing to the wise benevolence of Mr. Alexander Montgomery, who, having liberally helped ten of these churches, did so on condition that they should make a strenuous effort to help themselves until entirely out of debt. This generous help in nearly every case was accepted in the spirit in which it was given and loyally seconded by the churches. The churches that did so were helped by him a second time. They are thus in excellent shape for enlarged and aggressive work, and

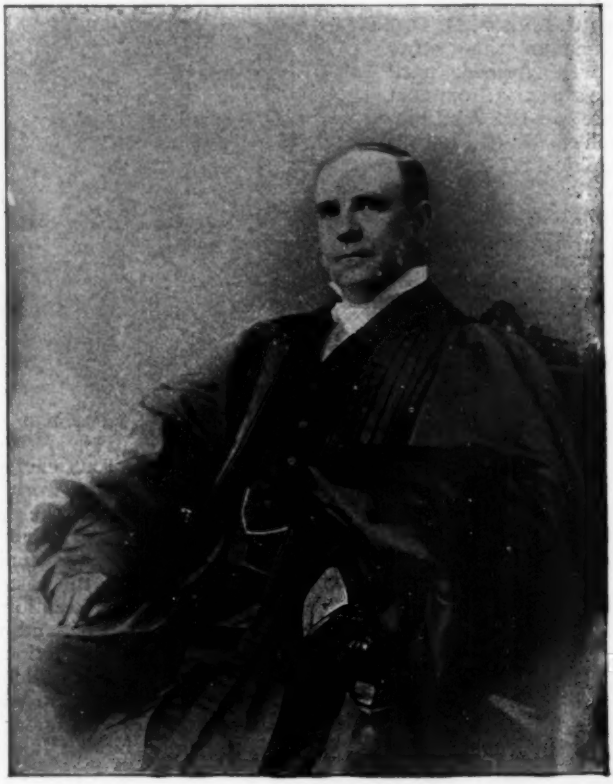
Rev. Dr. W. A. Scott, D. D.

Rev. David H. Irwin

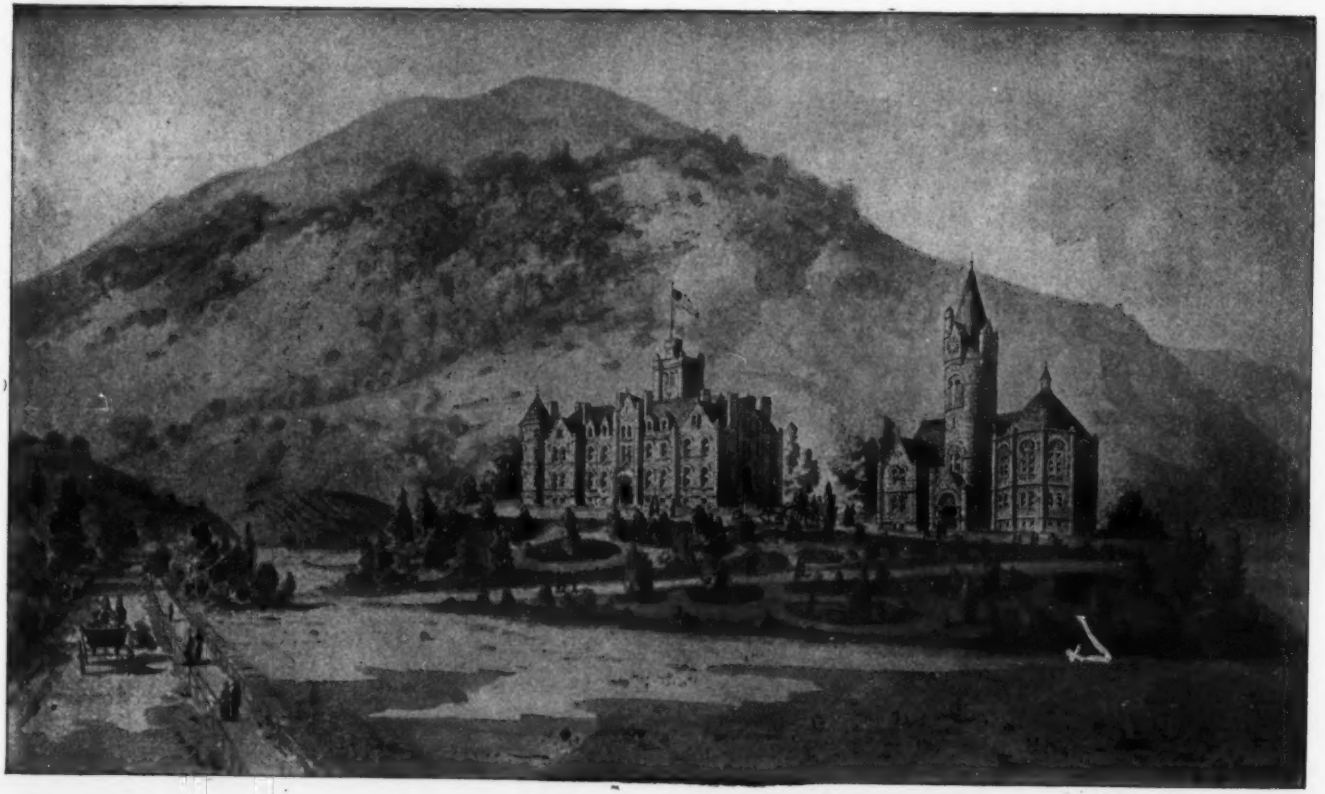
most of them are taking advantage of the opportunity.

EDUCATION

Presbyterianism has always stood for liberal education. It requires its ministry to have pursued a full college course or its equivalent, and then a further theological seminary course of three years. Presbyterian families have always earnestly striven to provide a liberal education for their children whatever course in life lay before them. That desire early manifested itself in California. As early as March 1849, when yet their tents were scarcely pitched, we read that "Dr. Robert Semple, Thomas O. Larkin and Bethuel Phelps deeded a lot in Benicia sufficient for a college under the auspices of the Presbyterian Church." Later a school for boys, to which was added a college department, was conducted in this city on the corner of Geary and Stockton streets, where the Wigwam now stands. Subsequently it was removed to University Mound — the building now occupied by the Lick Home. For a long time this school was presided over by the learned and venerable Dr. George Burrowes, the veteran in the ranks, until his transfer to the Chair of Hebrew and Greek in the Theological Seminary. By a train of adverse circumstances this school failed



Rev. Thomas C. Easton, D. D



San Anselmo Presbyterian Seminary

Montgomery Hall

Scott Hall

Rev. Henry C. Minton, D. D.

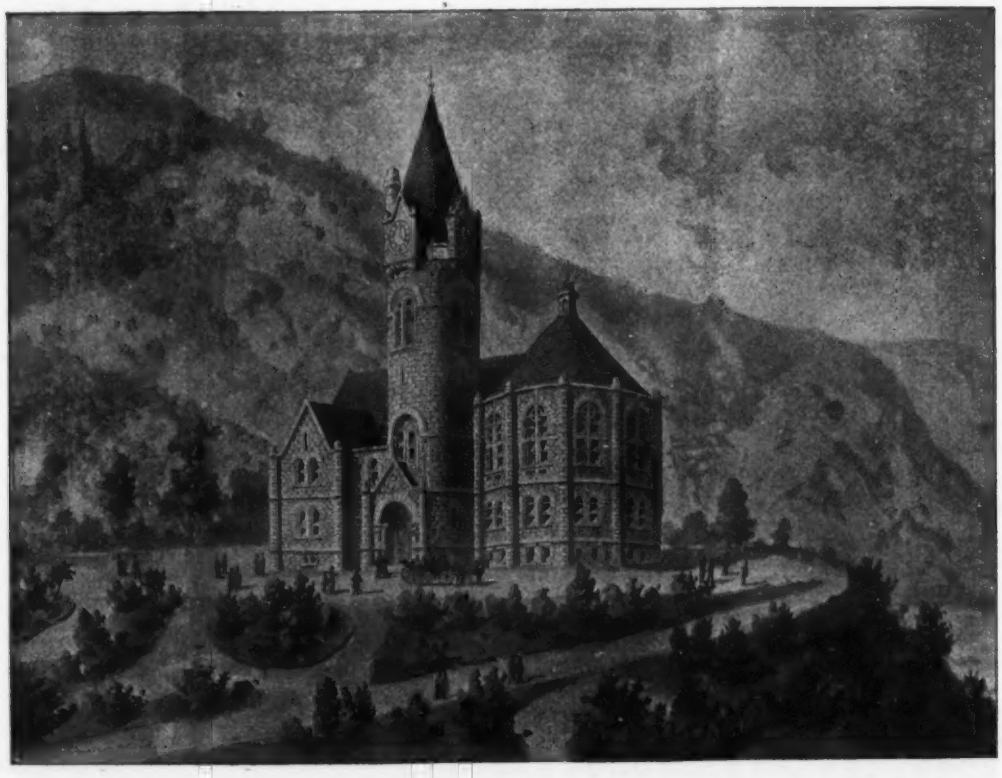
by young men, native sons of this State, as to where they can properly fit themselves for the higher activities of life under pronounced Christian influences, and where they can receive a specific training for the Gospel ministry. That demand must be met as soon as possible. The Church on this coast has never had a wiser or more aggressive and tenacious leader in this line than Mr. Crosby, now at the head of the Mount Tamalpias Academy.

THE THEOLOGICAL SEMINARY

In November 1871, the San Francisco Theological Seminary was organized by the Synod of the Pacific. Of its first Board of Directors, although it is only about twenty years since they were appointed, the only surviving member is Robert J. Trumbull, who is now the efficient Secretary of the institution and to whose faith and

to continue in the city, but was carried on with good results under Professor Gamble at Litton Springs and then at San Mateo, and by Dr. James Matthews in the Westminister School on Haight street, San Francisco. These educational interests are now continued and increased by the vigorous Mount Tamalpias Academy at San Rafael under the guidance of the Rev. Arthur Crosby. This Academy includes a college department, and in all its features is fully in line with the advanced subjects and methods of study of the day. Whereas the religious influence is not strictly denominational, it is thoroughly Christian. It is hopefully expected that this institution will grow into a well equipped college. Valuable as the great universities of the State are and heartily as their work is appreciated the presence of the Theological Seminary makes a college in San Rafael not only desirable but necessary. Constant inquiries are made

Rev. J. C. Smith, D D.



Scott Library Hall

works much of its temporal prosperity is due.

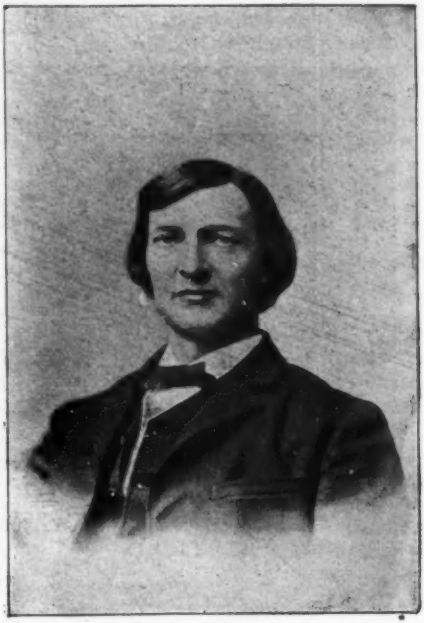
Among the early professors were Doctors Scott, Alexander, Burrowes, Poor, Eells, Lindsley, Fraser and Hemphill. Chief among these was Dr. Scott to whose personal and professional assiduity the character and continuance of the Seminary is largely due.

The present Professors are:

Dr. George Burrowes, Professor Emeritus, now eighty-two years of age, but wonderfully preserved in body and mind. He is the venerable patriarch of the family, who having come through the long wilderness march is spared to look in upon the better times that are dawning. Dr. William Alexander, Dr. Robert Mackenzie, Professor Thomas F. Day and Mr. Charles G. Buck, Professor of Vocal Culture and Sacred Music. The Rev. Henry C. Minton, D. D., has been recently elected Professor of Systematic Theology. Dr. Minton is in the early prime of life, a man of wide reading and travel, conspicuous for a mind well informed and disciplined, a conservative liberal in theology, holding the truth in love.

Rev. Arthur Crosby, D. D.

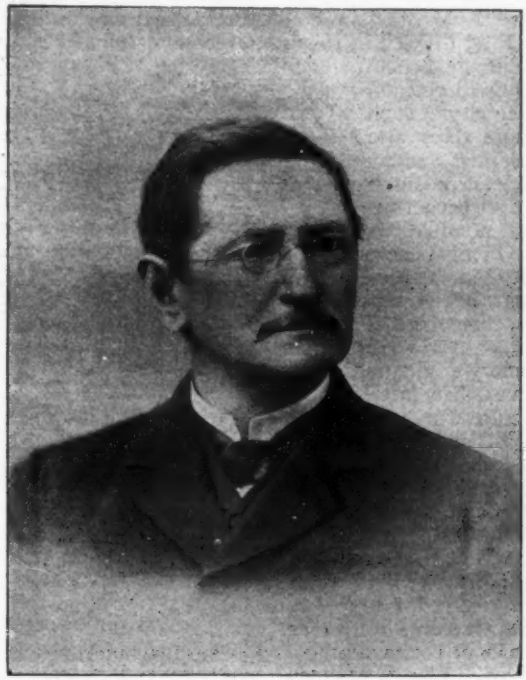
In the beginning the seminary classes met in the lecture room of different churches. The earlier students recall with much pleasure their experiences in the rooms of St. John's,



Robert J. Trumbull

the walls ceiled with redwood and theology. In 1878 a convenient building was erected at 121 Haight street, which has been occupied until this present time. The importance of this institution to the future of the Church on this Coast was fully appreciated by friends in the East as well as here. Robert L. Stuart, of New York, among his many gifts to Presbyterian institutions, gave $50,000 to partially endow the Chair of Theology in this Seminary. Dr. Burrowes and Dr. Scott gave their valuable libraries, which, with libraries from friends in the East, fill the shelves with 18,000 volumes. Smaller but equally welcome gifts were made from time to time by local friends. About six years ago Mr. Wm. S. Ladd, of Portland, Oregon, gave $50,000 to the Chair of Pastoral Theology. The Churches of California, under the in-

spiration of Dr. Eells, gave $50,000 to the Chair of Church History. Nathanial Gray, an elder for many years in the First Presbyterian Church, one of its quiet, constant and able counsellors, who had contributed constantly to every good cause, gave the Theological Seminary three fifty-vara lots on California street, valued at $25,000. A. W. Foster, of San Rafael, gave fourteen acres of land at San Anselmo, in Ross Valley, as a site, if appropriate buildings should be erected. San Anselmo is but fifty minutes run from the city, with numerous trains each way every day at low rates. It is probably the most beautiful spot, all things considered, in California. The Seminary is surrounded by hills draped to the summits with perennial foliage, and dotted everywhere with suburban villas, itself standing on the summit of a high knoll in the valley. Then came the principal gift of $250,000 from a California pioneer, and one rocked in a Presbyterian cradle—Alexander Montgomery. It was conditioned on the Directors raising an additional sum of $50,000, which was speedily done, one friend in the East giving $30,000 of it. With this money the substantial buildings at San Rafael have been erected, consisting of Montgomery Hall, containing fifty rooms for the students; Scott Library Hall containing the library, chapel and lecture rooms. These buildings are models of strength and beauty. Mr. John Wright, of Wright and Sanders, the architects, is himself an active Presbyterian layman. The balance of money was applied to the Endowment of Chairs. In addition to this gift Mr. Montgomery gave a sufficient amount



Rev. William Alexander, D. D.

to erect three professors' houses on the grounds. Scholarships of $2,500 each came from Mr. J. D. Thompson, Mrs. Moses Hopkins and from others; one of $4,000 came from Mrs. Bulkeley of New York. Mrs. C. B. Alexander, of New York, has remembered the needs of the young men, natives of this State, preparing to enter the seminary with an annual gift of $500. Two scholarships ($5,000) were given by Mr. David Jacks, a Presbyterian Elder of Monterey. Mr. Jacks was a member of the First Church in 1849; taught in the Sunday School when it was organized, and because of the scarcity of such material in those days also taught in the Baptist Sunday School. His interest in Christian work has ever been thus wide, all the denominations feeling the help of his benevolence. These scholarships are auspicious beginnings which came at a time of great need.

Mr. Montgomery's gift is the first one of such a large amount given for Christian work on this Coast, and thereby marks a new and hopeful era. Mr. Montgomery is also of that energetic and benevolent Scotch-Irish blood; born in 1825, in County Down. His interest in education arises not out of what he received, but of what he did not receive in his own youth. Six weeks of common school was all he enjoyed. Like many men of similar experience he has been busy educating himself ever since, until there is scarcely a practical topic on which he does not have an intelligent opinion, or an important part of the old world or of the new, which he has not seen and studied. And like many men of similar experience, desires that other young men should enjoy in their youth that which he was denied. It is felt, however, that these are only beginnnings, but such beginnings as encourage all who love the church and its work in this State. They are a warrant that the judgment and sympathies of this community are sound on the permanent interests of mankind. They are an earnest that what is so well begun will be carried on by men of similar philanthropy to completion, and that here, too, Christian people will have their Princeton and their Yale, where their sons and daughters can be trained for the life that now is and that which is to come.

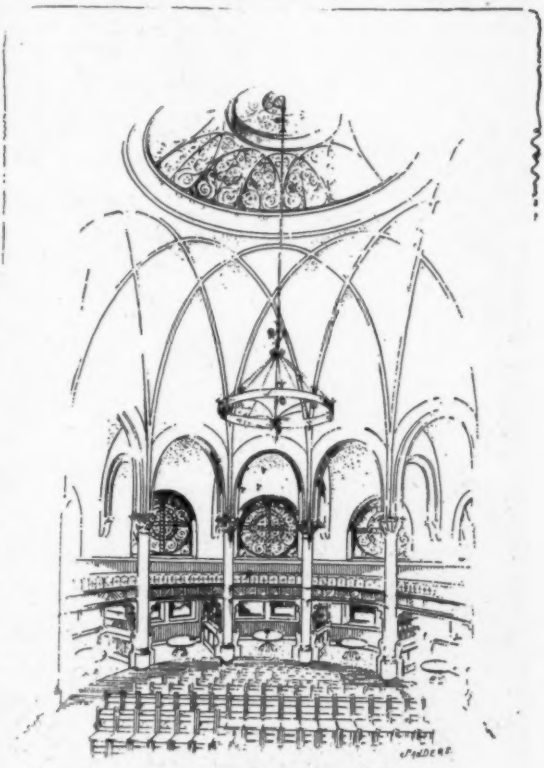
Entrance to Scott Hall

REVISION OF THE CREED

The Presbyterian Churches in this country and in others have been lately considering the advisability of making some changes in the forms of doctrine embodied in the Westminister Creed. The discussion naturally extended beyond the form to the substance of some of the doctrines. The desire of the Church, however, is confined to a revision of the language employed in some instances, and of the general balance and symmetry of all the doctrines. There is no serious desire or prospect of

revising out any of the fundamental truths for which this Church has so long contended against king and prelate, and to which it has affectionately adhered from its beginnings. It is natural that in a church where the ministers hold equal rank and where every Assembly is made up of an equal number of laymen and ministers, and where all laymen as well as ministers have equal rights to the floor, to deliberate and to vote there should be vigorous discussion over such proposed revision. As "decency and order" is the first commandment in the parliamentary proceedings of this Church, a committee of ministers and laymen distinguished for their ability, was appointed to guide this discussion in proper channels and to formulate its results, and in due time to present to the General Assembly of the Church what changes seem to be desired by the people. When the changes are thus formulated, they will be submitted to the people for final acceptance or rejection.

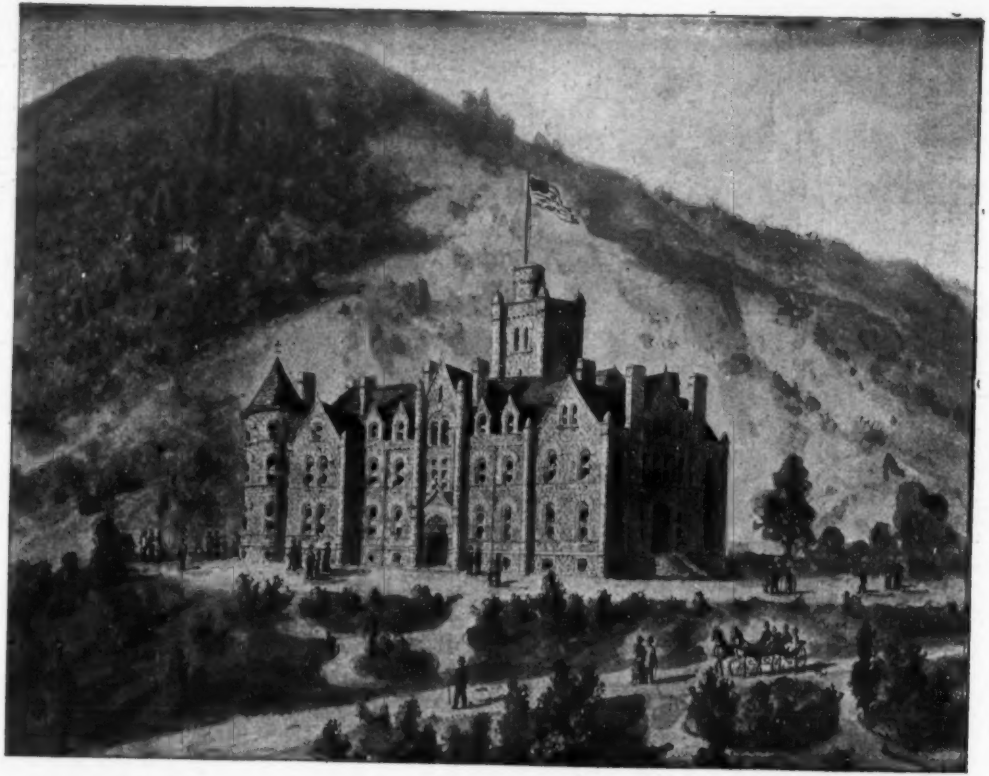
The Church on this Coast was honored by the appointment to that committee of the Rev. William Alexander, D. D., one of the first professors of the San Francisco Theological Seminary, and who continues to fill the Chair of Ecclesiastical History. Dr. Alexander is a conservative revisionist, and admirably represents the prevailing sentiment of the Church on the Pacific. What others have done for the seminary by gifts of land or money, he has done by his pen. He has made the Seminary known and respected throughout the land and in other lands.



The Seminary Library—Scott Hall

THE CHURCH PAPER

The medium of communication between the Churches of the Pacific is the *Occident*, published in San Francisco. It has been a difficult matter to establish such a paper here. Many of the people settling in California were attached to the religious papers of their early homes. All alive to the material interests of this coast, depending on the local papers for information on the secular interests, they were long content to remain somewhat indifferent to what was doing in the different churches here, while they carefully kept up their interest in all the details



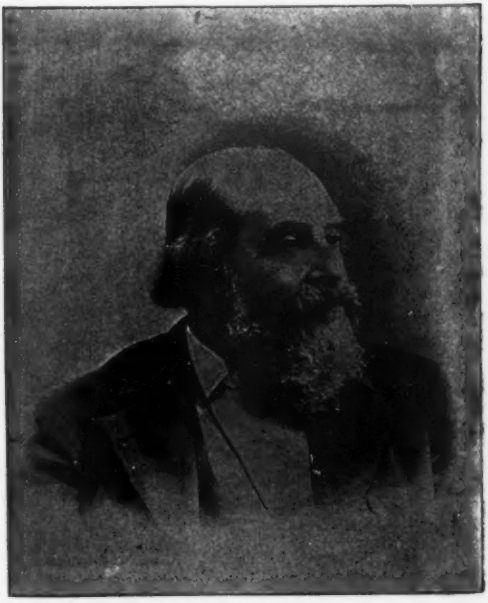
Montgomery Hall

Alexander Montgomery

Church of the coast, it is national in its sympathies. The religious press owes much of its practical influence to that ready writer, Dr. C. E. Babb, better known as *Rusticus* and *Obadiah Oldschool*. Dr. Babb succeeded Henry Ward Beecher in the second Church of Indianapolis, when the latter went to Brooklyn. Health requiring him to come to this coast, he settled in the wilderness, near San Jose, a wilderness which has come to blossom like a rose. Dr. Babb has done more to inform the Christian readers of the East of the advantages of California than any man living. He writes not only for the *Occident*, but for the *Interior* of Chicago and the *Herald* and *Presbyter* of Cincinnati, and has done so weekly for many years. The first question asked by many coming here to visit or to

of the Church "back East." This is slowly changing. They see that their children are growing up here, knowing little of the Church "back East." The only Church they will know practically is the Church of the Pacific. The pressure of material things is so great that it requires a faithful effort to keep the fact before them that the cause of Christ and His Kingdom are growing here, too. As these things are duly considered, the *Occident* is appreciated in the family.

At the same time, the paper, under the editorial care of Dr. Nesbit and Dr. Faris, ranks in practical ability with the best of the religious papers of the country. Whereas, it is thoroughly devoted to the



David Jacks

settle is: "Where does Dr. Babb live?" He is now getting to be an old man, but hale and hearty, his heart having lost none of its enthusiasm for California, and his pen none of its cunning in telling the glories of the land.

One can only wish that these men who have laid the foundations of our Christian communities could live to see the goodly fabrics that are surely rising upon them. In building the larger structures of our city, we notice that the stones of the lower stories are put in place in the rough, that during the months in which the construction continues debris gathers about them. When the roof is put on, the masons return to these rough stores, clear away the debris, and all danger from falling material being past, they then carve them into shapes of beauty. It is for these men to lay the foundations and be buried in debris, some of them forgotten and some unknown. When the social fabric is well up, the thoughts of men will return to them, and inquire for them and search diligently for the humblest and carve them into historic fame, and other ages will know that they lived and labored in wisdom and in faith building better than they knew.

[The present article, which relates to Presbyterianism in San Francisco, will be followed by others on this denomination throughout the coast. The picture of the Rev. Robert Mackenzie is used against his wishes; the publishers believe, however, that the article would be incomplete without it, and insert it upon their own reponsibility.]

Alcove in Montgomery Hall

SOME DOGS I HAVE KNOWN

BY CHARLES FREDERICK HOLDER

IT has always been my good fortune to possess a dog, sometimes two, and if it must be confessed, often a baker's dozen. They are good comrades and true, and when the full and complete history of the race comes to be written, it will be shown that man has no more faithful and trusty friends than the canine followers at his heels. In the present paper I merely intend presenting some facts regarding my own dogs, and others that I have known, giving some few instances of their intelligence. When I conjure up the long list of canine friends that have filled places in my affections during the past thirty years, it is difficult to select one that had characteristics more remarkable than another, but for a warm and loving nature commend me to an old greyhound (I would add "fat" did I not know that she would see this) who now holds forth in the southern country.

It is generally believed that greyhounds are not affectionate, but at least there is one exception. The old dog, Mouse, we called her from her color, was the embodiment of affection. She was my constant companion for five years or more, riding and hunting, and in her palmy days, when riding over the mesa, she would, at the word, spring up and stand behind me upon the pony, with her head under my arm on the keen lookout for "Jacks," and when one was started, bound down to soon run it down by a fine exhibition of speed. That dogs become mortified and ashamed was sometimes ludicrously illustrated. Once we were following a hare, and after a long run cornered it near a group of bottle-shaped cypress trees, at least fifteen feet in circumference. As a last resort, an inspiration in its way, the hare ran at the tree, and almost exhausted began to run around it, followed by the dog, while I pulled up and watched the trick. After four or five turns the dog began to get dizzy, and finally, with a most pathetic and shamefaced glance at me, she stopped, staggered up to the pony, and took her place behind me, while the Jack trotted off, having, as I thought, fairly won his liberty. On another occasion I saw a Jack, after at least a mile run, when about to be seized by Mouse, turn like a flash, dash between her fore legs and take the back track, just avoiding my horse's feet. We pulled up, and the dog stood for a moment, looking into the air and all around, then, with an ashamed look at my laughter, crept behind me. It was my custom to hunt with the dogs at least once a week, and they always knew when I was going. The sight of my crop, spurs and other accessories was the signal for various demonstrations. Sometimes when a servant had laid out various articles the night before, I would be awakened in the morning by the violent bursting open of the door, and the next moment Mouse would be standing fore paws on the bed, with my leggings in her mouth, her eyes speaking volumes of the sport to come. I often suspected that she informed the other dogs, as frequently when going out, I would find half a dozen greyhounds waiting, all eager to join in the sport. It is often said that, as greyhounds lack scent, they are easily lost and have no strong homing instinct. In my experience, I find the reverse to be true. Once on a hunt I lost my dogs about 15 miles from home. The heat was intense and they had given out completely. I spent the rest of the day in hunting for them, and finally gave them up and

A Greyhound Type
Photographed from life

reluctantly returned home. An hour later the dogs arrived, and I found later they had struck directly across country—a region in which they had never been before, showing that they were by no means deficient in the locating powers. In hunting with greyhounds, in my experience they invariably come back to the starting point after a long chase. My experience with greyhounds has been that they are faithful, affectionate and very intelligent, and as companions they have precedence over all other dogs in my estimation. An English scientist is engaged in a series of experiments to test the question as to whether apes talk. Dogs undoubtedly possess a language vocal, and expressed in various ways, and that they understand, or that some individuals understand just what is said, I have no doubt. On my departure from home, my dog always knew it in advance. If nothing was said, the packing of trunk or bag was sufficient, and she would follow me from room to room, evidently intending to see as much of her master as possible, and troubled in spirit at the approaching separation. As to understanding what is said, almost any reader of this paper will recall an incident in their own experience with dogs. One little black, woolly-haired dog, which I once possessed, was very sensitive in this respect. Address him in ordinary tone and praise his good temper and parts, and he was the picture of delight. Then without change of tone I would say: "A good dog, yet rather a nuisance sometimes. I fear we shall have to put him out of the way." This dire threat, uttered even in dulcet tones, had an instant effect. Von Molke—for this was his name—immediately put on a beseeching look, and with tail between his legs, would leave the room. This little dog would go down for the paper, bring up the mail, call the servant to open doors, by quick series of barks. When he wanted a drink he approached the water faucet and gave a low muffled bark. Another sound was used to ask for a blanket upon which he slept, and upon the door being opened he would enter, bring out the cloth, arrange it and go to sleep. A singular example of understanding in dogs was observed in a fine terrier called Mac which I owned some twenty years ago—Peace to his ashes. It was in an army garrison and Mac lived a life of pleasure, being on good terms with every one. There was but one disagreeable thing in his life. This was the firing of the evening gun at sundown. Mac evidently stood it as long as possible and finally one night just before sunset I saw him crawling upstairs and following found him crouched under the bed. In a moment the evening gun fired, when out he sprang and rushed downstairs shaking himself as though throwing off some disagreeable experience, and every night whenever he could. he went through the same manœuvre. This dog was especially at home in the water and would dive under and raise heavy objects from the bottom.

To show his faculty for finding his way home I will relate a single incident. One day General Sherman was visiting the fort and a party was gotten up to go to the Portsmouth Navy Yard and Mac was taken; at Portsmouth we drove five miles back into the country and there I missed the dog and returned believing him lost. A few days later, to my surprise, he stepped from the Baltimore boat and rushed up to the house, delight expressed in every motion.

I took pains to investigate his movements with the following result. He had made his way back to the Portsmouth Navy Yard and finding the tug gone had probably stood for a while in a quandary. He knew the large steamer that plied between Norfolk and Baltimore by sight as it passed our house every evening, often stopping, so it is possible that Mac saw the steamer across the river in the Norfolk slip. In any event he left

A Pack of English Greyhounds

the navy yard, found the ferry, crossed over to Norfolk, Virginia, then hunted up the Baltimore steamer of the old Dominion line and immediately struck up an acquaintance with the purser who, taking a fancy to him, locked him in his stateroom when the boat sailed so that he would not leave the vessel at Old Point Comfort, little thinking that the dog lived there; this the purser did for several trips, as he afterward told me, but one day as the steamer pulled up to the wharf Mac slipped down to the lower deck and as the gang-plank was run out he sprang ashore and a moment later was at home showing every evidence of joy at his return.

This dog was a canine philosopher and after his fashion did no little thinking. He developed late in life a decided antipathy to cats and usually was master. On one occasion he met his match and after a somewhat extended struggle he evidently gave up the contest and after a moment's thought trotted out and disappeared in the direction of the fort. It might have been twenty minutes, not longer, when Mac was seen returning, not alone but with a friend — a bull dog who lived within the fort. Mac led his companion to the spot where the cat was still cornered and without delay the combined forces began the attack which could have but one end.

A Subject of the Czar
From life. (Russian Poodle)

In brief, if Mac did not go to his friend for aid and communicate the situation to him, then outward signs pass for very little.

This dog was fond of going to church with us and insisted on taking his place in the family pew, and one Sunday I became conscious of unmistakable snores that grew louder and louder until a perceptible smile passed over the faces of those in the vicinity. Mac was the sinner and when awaked by a moderate push he uttered a roar of anguish that literally brought down the house. Several experiences of this kind led me to remark one *Saturday* night in Mac's presence that I should lock him up in the morning so that he could not go to church and disgrace us. When the morning came, and we prepared to go to church, I called the dog, who was lying in the road in front of the house (an unusual place) and for the first time he refused to obey me, answered my calls by wagging his tail and other protestations of friendship, but no amount of solicitation could bring him within my reach, and finally when we started he fell in fifteen or twenty feet behind us and went to church, creeping into the pew as usual, after we were seated, giving me a complacent look out of the corner of his eye. That the dog understood that I had designs upon him, and avoided me for that reason, I have no doubt. Among dogs the poodle is, perhaps, one of the most intelligent. Some years ago I made the acquaintance of a remarkable poodle. Its

Spaniel and Hedgehog
From life

Setters
From life

owner had shaved its hair, so that it bore upon its back a perfect anchor in high relief. Among the various performances, which the dog went through was a game of ball, and I learned from the boy who owned him that the poodle was a regularly installed member of a baseball nine and held the position of left field with honor to himself and the club. To illustrate to me how well the dog played, he moved away forty or fifty feet and turning quickly, threw the ball as though a regular baseman was before him. The dog caught it in his big mouth, wagging his tail as he ran to deliver it, slow balls, red hot, sky-scrapers, it was all one to the poodle, and to test him, I threw a ball skyward myself, as far as I could. The dog ran with remarkable judgment to about the place where it would fall, and in a half crouching attitude, moved about, and as the ball descended, settled back receiving it fairly in his powerful jaws. In a series of experiments I did not see him miss the ball once, and that he took the greatest delight in the game was apparent in every movement, asking as plainly as possible that the ball be thrown again and again. Dogs are like persons, they vary in their grades of intelligence, nor is it breeding, some of the most degenerate curs show the most intelligence, while the well-bred dog with an aristocratic pedigree is often more than stupid. What can be accomplished in dogs by careful selection is well shown by the types presented in the accompanying illustrations taken in England. They all spring from the same stock, but there is the same difference between the poodle and the greyhound that we find between the race horse and the dray horse. Of all the animal kingdom, the dog is man's best friend, nearly always faithful to him, solicitous of his welfare, content to share his perils and dangers, and when separated, often mourning his loss with a deeper grief than human friends. What could exceed the deep love and affection of the famous little Scotch Terrier, Greyfriars' Bobby, that upon its master's death flung himself upon the body, moaning and crying, refusing to be comforted? When the body was buried, the dog was taken away by some friends; but the next day the paling of the enclosure was found broken, and Bobby was discovered lying across his master's grave. A friendly sexton allowed him to remain, and the story being bandied around, found its way into the papers, and the little mourner became famous as Greyfriars' Bobby, He refused to leave the grave, and was fed by a friendly butcher, who brought him meat, but the dog gradually failed, and one morning, as the old sexton was making his rounds, he found the dog lying across the mound, fast asleep. He spoke to him, but the little dog was dead. Such instances as this, and they are not rare, have their moral. They suggest to us that the dog, and for that matter all animals, may know vastly more than we give them credit for; at least, they have their rights, and should be cared for and protected in them.

THE ORANGE IN CALIFORNIA

BY M. C FREDERICKS

THE London *Graphic* said not long since, that "as one drives through the orange-growing districts during the winter months—that is, in the full height of the orange harvest—the sight will almost be allowed to rank as a world's wonder." And rivaling the harvest is blooming time, when the cool, glistening green is thickly spangled with stars, and showers of snowy petals falling in lavish prodigality whiten the ground beneath. Everywhere is the hum of bees extracting sweets from nectar-filled blossoms, from which they make a most delicious honey, even, through their mysterious alchemy, imprisoning in their tiny waxen cells the very fragrance of the flowers, so like that of the tube rose.

It often happens that the ripe, luscious fruit is still ungathered when the trees are all abloom for the next year's crop, and then the scene is, as one has expressed it, "a general combustion of beauty."

But an orange grove, with its evergreen trees, compact and symmetrical, is always pleasing to the artistic sense, each season having a charm of its own. To this attractive picture may be added the closely cut cypress hedges, the broad avenues and well-kept drives, shaded with the stately eucalyptus, flowering magnolia, Grevilla robusta, — a beautiful tree, broad-leaved,—palms and the graceful pepper, with its feathery, drooping foliage and red berries, and the mountains always for a background. No wonder is it that one who sees an orchard for the first time becomes enchanted and is seized with an uncontrollable desire to possess one of his own.

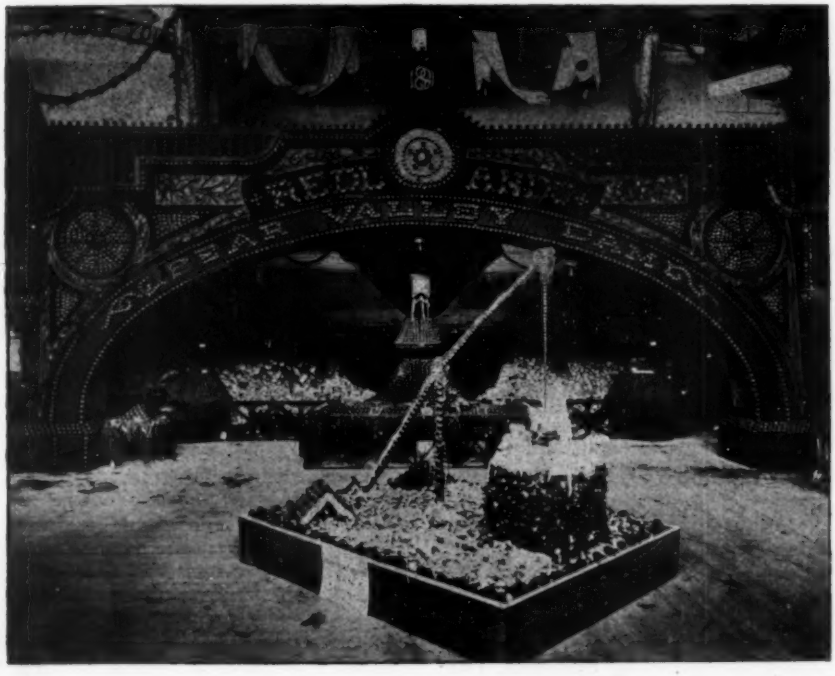
It is indeed a most attractive industry, and a majority of those thus engaged are people from Eastern cities, who became fascinated with the remarkable beauty of an orange grove, and were lured to the outdoor life, with its sunshine and fresh air, by the opportunities offered for financial gain in this most healthful occupation. It is also an independent life, affording opportunity for mental culture and enjoyment, where one may have a home that rivals in elegance that of the city, and not be deprived of its wealth, refinement and education. Even when the owner finds it more to his taste to do business in town, he may still have his country villa, surrounded by orange trees that materially swell his income.

A woman may own and operate an orange ranch as successfully as her stronger brother, and instances are not rare where ladies, broken in health, have so invested their capital, and not only found themselves with a competency, but also with renewed health and energies.

Citrus fruits have been planted and grown with varying degrees of success in thirty-eight of the fifty-four counies of California, and orange trees are in bearing as far north as Redding, which is in sight of Mount Shasta, yet the area suited to its profitable culture is really very limited.

It is the opinion of some that citrus culture will never become a leading industry in the central and northern portions of the State, as frosts are of too frequent occurrence to permit the best results. However, there are well-sheltered localities in the foothills, to which this rule does not apply. This is particularly true of many places in the San Joaquin Valley and in Butte County, which has a larger area planted than either of the southern counties of Santa Barbara and Ventura, though very few are in bearing.

The orange does not thrive in proximity to the ocean. The excess of moisture and the fogs at certain seasons of the year produce a fungus on the trees and fruit that detracts from the fine, healthy appearance of both, and necessitates either the extra expense of cleaning or placing the fruit on the market at reduced prices. For this reason, the otherwise suitable lands of Santa Barbara and Ventura counties, as well as parts of Orange, Los Angeles and San Diego counties, are better adapted to lemons, which do not so much object to a moist atmosphere.



The Redlands Exhibit, Los Angeles Citrus Fair

San Bernardino stands at the head of the orange-growing counties. The trees are especially free from smut and fruit pests, and are remarkably bright and healthy in appearance, consequently its fruit is quoted at higher prices than elsewhere. The section, of which Riverside is the center, has far the most extensive area devoted to oranges, and is growing more rapidly than any other. Redlands carried away the prize at the State Citrus Fair, held at Los Angeles last April, and Riverside proudly displays three gold medals awarded at the New Orleans World's Fair, for the best collection of oranges from California, the best collection from any part of the United States, and for the best exhibit from any part of the world.

While there has never been a time since the first seeds were planted by the Padres at the Mission San Gabriel, about the year 1804, that oranges have not been grown in California, the industry, as such, did not come into special prominence until

after the experiment of Riverside, though there were already several famous orchards in or near Los Angeles, and some fine trees at Old San Bernardino. One very good reason why orange growing did not earlier receive more attention was, simply for home use. The famous Wolfskill orchard, planted about 1840, was the first attempt at growing them for profit, and it sometimes gave its owner a yearly income of $1,000 per acre. For many years it enjoyed the distinction of

Irrigating an Orange Nursery

because the whole country was one vast stock range, and there was no means of protecting trees except in garden plots, as Southern California was practically treeless, and the days of wire fences were not yet.

Several small orchards were planted soon after the Mission orchard, and like it, were surrounded by an adobe wall, the first fruit being grown being the largest in the United States, though containing only twenty-eight acres; but it is now a thing of the past, the city of Los Angeles having overgrown and absorbed it.

To the early dwellers in Southern California, the broad, beautiful valleys and rich mesas were fit only for grazing, because of the lack of rain in summer, and the scarcity of water.

But the flocks and herds have long since disappeared, and the arid waste is now marvellously fruitful through the miracle wrought by irrigation. It is impossible to obtain the exact figures, but according to the published statement of Secretary Lelong of the State Board of Horticulture, there are now in California the following number of orange and lemon trees:

County	Trees	No. over 5 yrs. old (or in bearing)
San Bernardino	2,467,200	415,722
Los Angeles	1,065,019	523,129
San Diego	236,227	33,721
Orange	159,095	87,357
Butte	120,794	3,389
Ventura	90,070	12,859
Santa Barbara	57,350	10,450

Total number of orange trees in the State (considered by some an over estimate) 3,958,451. Number in bearing, 1,025,899. Total number of lemon trees in the State, 616,467.

Last season's shipments of oranges and lemons from the Southern counties were:

	Boxes	Carloads
Los Angeles	632,071	2,212
San Bernardino	487,882	1,708
Orange	147,332	516
Ventura	19,475	68
San Diego	18,861	66
Santa Barbara	6,478	23
Total	1,312,099	4,593

Of this shipment, 20,904 boxes, or 700 carloads were lemons. As the shipping season extends from the middle of January to the middle of June, it would require a shipment of three train loads of ten cars each, per day, for that length of time to market the crop, Sundays not excepted.

The large profits obtained from the few old orchards at Los Angeles and San Bernardino led to the bold experiment, twenty-one years ago, of diverting the waters of the Santa Ana River, which were conducted on to the arid plains some distance below, with the sole intention of growing oranges as a business.

The land without water was valued at $1.25 per acre, and at one time its owner refused to pay taxes on it any longer, as it was "utterly worthless."

The scheme was considered one of the wildest, as there was no evidence that oranges would do well in that locality, while many thought there was sufficient reason why they would not. However, enough daring men were found to buy the land at from $10 to $35 per acre, with water, and plant orchards. And thus was begun the first real orange growing on an extensive scale, and the result is—Riverside, while Pasadena, Ontario, Pomona, Orange and other localities tell a similar story. To be sure, their water system cost a round million, and it has required hard labor and much patient waiting; but fifteen millions is a conservative estimate of its present valuation, and it is far from having reached its maximum value. In proportion to population, Riverside is said to be the wealthiest region in the United States.

Soon after the pioneer orchardists of Riverside came the Indiana colony, and planted the groves of Pasadena, now one of the best known resorts in the world, and since their success, fruit-growing settlements have sprung up as if by magic. Water is being developed in ways not dreamed of a few years ago, by the construction of dams and reservoirs, and by this means an abundance of water will be secured, in time, for all the lands of the San Gabriel and San Bernardino valleys. With the increase of irrigation facilities, the limits of the little fruit-growing settlements between Los Angeles and San Bernardino have been expanded until it will not be many years before they join each other, and the entire distance along the three lines of railroad connecting the two cities will be a continuous succession of fruit orchards, in which, of course, the orange will occupy a prominent place.

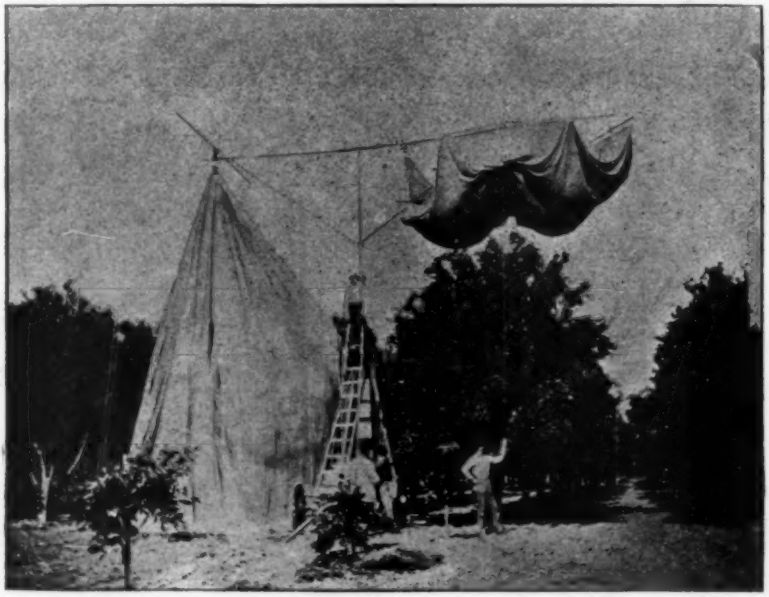
Numerous companies are developing water for what they consider orange land. The Arrowhead Reservoir Company is the most gigantic enterprise of this kind, it proposing to

A Seedling Orange Grove

construct a series of reservoirs on the eastern slope of the mountain range, bringing the water through a tunnel to the western side, and then a pipe line will extend from San Bernardino westward along the foothills into Los Angeles County. The work is already under way. It will cost a million dollars and irrigate thousands of acres of land.

The Bear Valley dam is being strengthened and the reservoir enlarged, and these two systems will cover a large acreage of good orange land. Large irrigation companies have been formed in San Diego County, and their systems will also include orange lands and a large amount that will be especially good for lemons. The Otay Valley will be watered by the Le Carte Company, Linda Vista by the Pama Company, and Fallbrook by the San Louis Rey Company. They each expect to irrigate 200,000 acres. Other important systems are already completed, and never before in the history of orange culture has there been such activity in planting as last year, and this season promises no abatement. In San Bernardino County alone 9,316 acres were planted in 1891, of which Riverside planted 4,000 acres. Redlands stands next with 1,200 acres, Alessandro following close after.

Pomona has an orchard of 400 acres, part of it just coming into bearing, which is said to be the largest in the United States, and the largest bearing orchard—90 acres of Washington Navels—is owned by H. B. Everest of Riverside, while Pasadena, Orange Duarte, San Gabriel, Pomona and Ontario have hundreds of acres in the orange.



Contrivance for Pest Extinction

The orange will bear five or six degrees of frost if for a very short duration, but if such temperature continues for several hours, or occurs several nights in succession, the fruit will be injured, and young nursery stock affected, though the trees may

not suffer. There is no absolutely frostless locality, as the present season has fully demonstrated, and the better the situation in that respect, the better for the purse of the grower. The extent of injury resulting from a temperature of 25° F., or lower, will be largely governed by the condition of the trees, whether dormant or growing, and of the soil whether wet or dry. It is always colder on the lowest soil, and even in the most favored districts the higher grounds are preferable.

An abundance of water for irrigation and a warm, dry climate, as nearly free from frost and fog as possible, is of more importance than soil, though poor, heavy soils, or land where water is very near the surface so that the roots stand in excessive moisture, should be avoided.

The cost and profitableness of a grove vary according to location, expense of preparing the ground, varieties planted, system of irrigation and cultivation, and skill in handling and disposing of fruit. Climate, soil and water must be supplemented by intelligent and well-directed care to insure success. Riverside furnishes an excellent example of the results when all these conditions combine and orange culture is pursued systemmatically and scientifically. Before twenty years had passed, 5,000 people resided on 6,000 acres of land, and had an income from fruits of a million and a half per year. The older orchards are now valued at from $2,000 to $3,000 per acre, though a number of those who own the best groves consider that there is no better investment for a reliable income, and

The Ladies' Exhibit of Los Angeles Citrus Fair

are not offering them at any price. Seventeen reports on oranges sent by Riverside to the Twenty-eighth District Agricultural Association in 1890 showed an average cost per year for cultivation, irrigation and fertilization to be $41.37 per acre, and a net profit of $455.77. The Pasadena Board of Trade has recently issued a pamphlet which can be obtained on application which shows some remarkable statistics in orange culture.

First-class budded trees will begin bearing the third year. It is not uncommon for four-year-old Navels to yield a box of oranges to the tree, and at five years they will net $300 per acre. At ten years old they are in good bearing, though neither they nor the seedlings are considered in full bearing before twenty years. As none of the California budded orchards have reached that age, it cannot be determined what their maximum yield may be, but the fruit from the oldest trees has sold for as high as $1,600 per acre.

The following table gives the cost of a Navel orchard, if all the work is hired, up to the time when it becomes profitable, though the price of land varies so much with locality, water right, etc., that there can be no definite standard, prices ranging from $150 to $500 per acre:

10 acres of land at $300	$3,000
Plowing and leveling the same	100
1,000 budded trees at $1.00 each	1,000
Planting and care for, first year	250
Care, second and third years	300
Care, fourth and fifth years	400
Water for the five years (say)	175
Taxes and incidentals	200
Total	$5,425

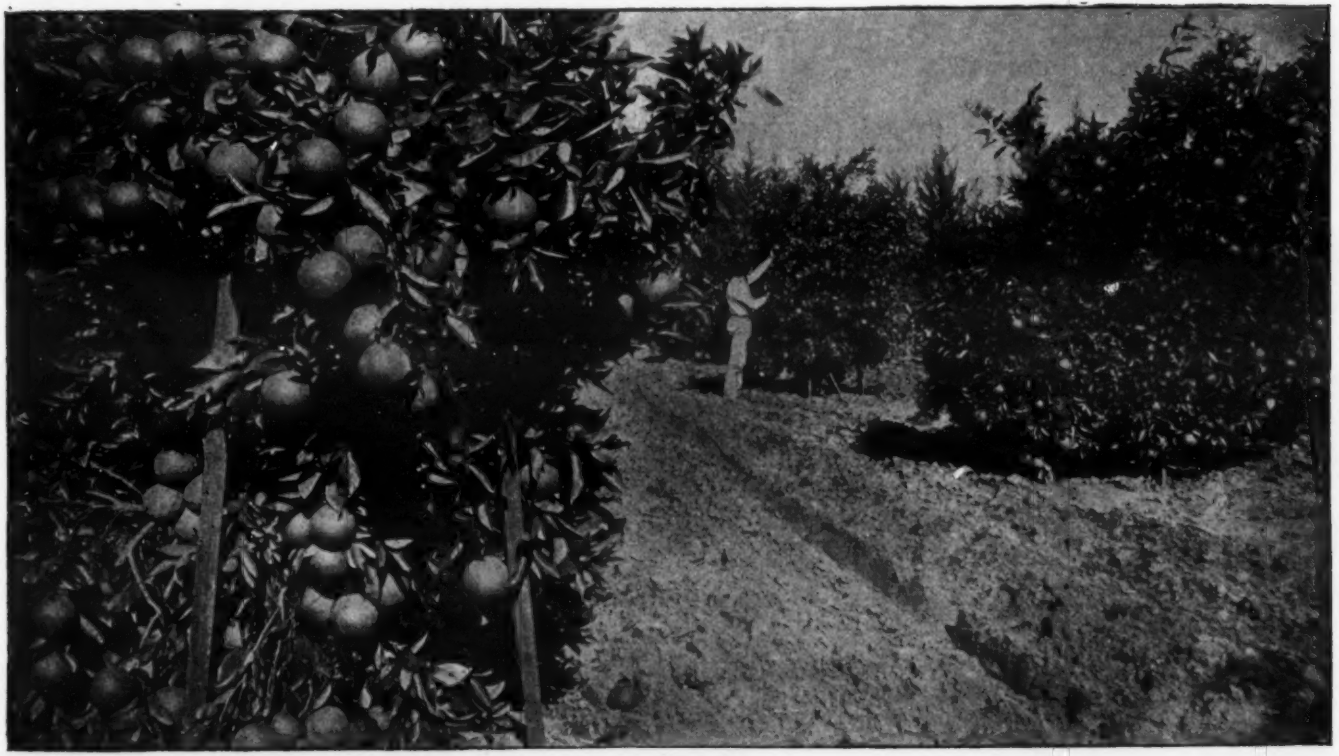
A seedling orchard begins to bear in six or seven years, but it will require ten years to yield a revenue of from $300 to $500 per acre gross. From this time on, its product rapidly increases. Because of its slow growth and the fact that the fruit does not bring more than half as much in the market as some of the budded varieties, late planting has been almost entirely of the budded fruit, though the seedling still has staunch friends. It increases in productiveness for a great many years, is more hardy and not so easily injured by frost, becomes a much larger tree, and makes up in the quantity of fruit what it loses in price.

A seedling orchard at Highlands, San Bernardino County, has netted $1,730 per acre. Some of the seedling trees at San Gabriel Mission, notwithstanding the gross neglect to which they have been subjected, are still in bearing, and in Europe there are trees several hundred years old.

The first orchards were all seedlings, but the introduction of budded fruit produced a finer quality and quicker returns. The quality of all California oranges has been greatly improved of late years through better care and adoption of the best varieties for the soil, consequently are growing more and more in public favor.

Although there are a hundred or more varieties, only a few are grown for profit in this State. The best variety is the Washington Navel, the name being derived from a peculiar umbilical mark, where a rudimentary orange, or occasionally a tiny well-developed one is tucked away just within the blossom end of the fruit. This orange is large, firm, highly colored, smooth-skinned and seedless. Then follows the Mediterranean Sweet, which ripens late, often not until May or June; the Malta Blood, of fine texture and flavor, the pulp mottled and streaked with dark red, sometimes being almost entirely that color, hence the name; and the St. Michael, small, firm and juicy, very thin skin, pale yellow and will keep until August. All are good, but ripening at different times, they prolong the marketing season. The Navel may be marketed from Christmas until the first of April, and the others from April until the middle of July.

As has before been said, the seedling is good, hardy and prolific, and a profitable tree to grow if one has the



Propping up the Navel

patience to wait. Nearly or quite all the budded trees are semi-dwarf and comparatively thornless, while the seedlings are thorny. The Navel tree has a tendency to overbear to

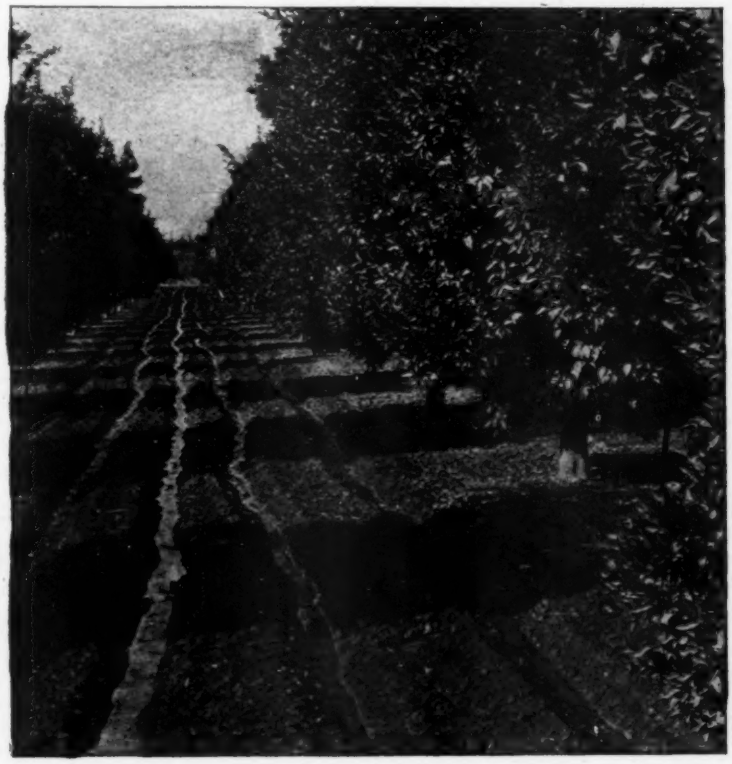
Picking the Navel at Riverside

such an extent as to break itself down unless well propped, and all kinds need more or less propping to prevent damage to the tree.

There are various ways of bridging the time until an orchard becomes profitable. A man who purchased land at Redlands planted it, and then worked at the carpenter trade to pay expenses, his wife superintending the orchard. Seed was planted, and a large orange nursery grown, she giving it much personal care, and at the proper time the entire stock was sold to one purchaser for $20,000. It may be interesting to add that a little later they sold the ranch for $20,000

more, after reserving sixteen acres for themselves, and all this from an investment of $1,500 seven years before.

The scarcity of trees for the extensive planting of the past few years, and the consequent high prices, has turned such attention to growing



Irrigating an Orange Farm on Level Ground

nursery stock, that soon the home supply will equal, if it does not exceed, the demand. A single grower planted a *thousand gallons* of seed last season.

The seed is drilled in rows in soil loose and sandy enough to not bake after irrigation. The seedbeds are watered about twice a week during the first summer, and require constant care. It is better to protect the plants from the hot summer sun when very young, and also from frost in winter. This is done by stretching muslin over them, though many not overcareful growers omit this part of the work, and their plants and bank account suffer accordingly. When one year old, they are transplanted into nursery form.

Budding is done the second or third year, those budded when three years old making the best trees. When the bud is well started, the original top is cut away and the young shoot supported by being tied to a stake. In time, the top is nipped so that it may send out branches and form a sym-

metrical tree, and in a year after budding it is ready for the orchard. As a rule, not more than half the plants that come up in the seedbed live and make marketable trees, though a skilful nurseryman may save 75 per cent of them.

The proper distance apart for planting in the orchard is from 20 to 24 feet feet for budded trees, and from 25 to 30 feet for seedlings, but the rule in the past has been only about twenty feet for each. For absolute safety the trees are, when young, protected from frost by wrapping with burlaps, or grass, yet many growers do not observe this precaution.

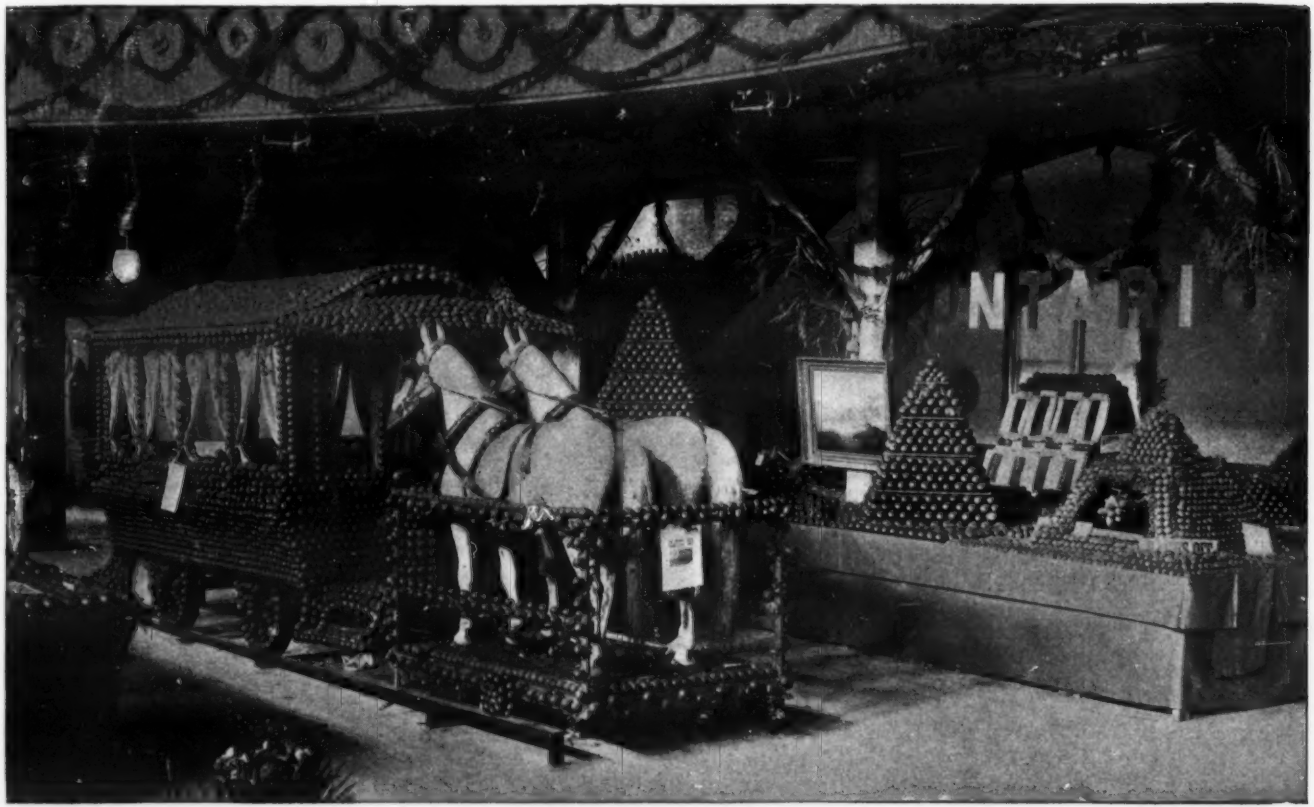
A net income of $500 per acre may be relied upon when an orchard comes into bearing, though productiveness is governed by care and feeding. An outlay of $30 per acre each year for fertilizers will be returned many fold at harvest time. There are many instances where well-fed groves at Riverside have netted from $750 to $1,100 per acre.

It is true that in a number of cases orange orchards have proved failures, but like all failures there was a reason for it. Most frequently it has been because of lack of proper selection of location. The tree will bear more frost than will its fruit and the temperature in winter may be such that although the trees will do fairly well, when the bearing age arrives the grower is disappointed to find the fruit frosted year after year, and in his case, at least, concludes orange growing is a delusion and a snare.

Again, water will be developed and spread over as large an area as possible, the quantity per acre being determined by the amount required for the young trees, but when in bearing, a much greater quantity of water is required. If the supply cannot be increased, the fruit will be inferior, and "orange growing does not pay." Or the land and water may be right, but the location be where the winds will whip the fruit until it is either blown from the tree, or so badly thorned and chafed as to seriously affect its market value. Windbreaks should protect the orchards even in the most favored localities, for the more the trees are protected the better. Another cause of failure is that the work is often undertaken as a speculation and not as an industry. Oranges will not grow of themselves, and the man who expects to take tons of fine fruit from an orchard which receives little or no care, will be disappointed. It does not pay to raise poor fruit, whatever the cause may be, but it does pay well to grow good fruit and no tree gives more bountiful returns for generous treatment.

Irrigation is necessary every five or six weeks, from March until November. The water is turned into a flume or head ditch along the highest side of the orchard, and from this flows in tiny rills through previously prepared furrows until the ground is thoroughly saturated—from 36 to 48 hours.

The scale is the orange growers one enemy. Of these the most troublesome are the red, the white, and the black. The latter becomes formidable only in moist localities, particularly in proximity to the ocean, and is another reason why orange growing near the coast is more difficult and less remunerative. The dangerous white scale at one time threatened the destruction of the business in this State, and as it did not confine itself to orange trees but spread over every other tree and shrub, other fruits were equally endangered. A search was made to find a natural enemy that might succeed in its extermination where man failed. The result was the importation from Australia, three or four years ago, of the Vedalia cardinalis or Australian ladybird, a tiny beetle. After being thoroughly tested, they were distributed in the various infected districts, and the white scale is now practically a thing of the past, as is also the industrious little friend of the orange grower, the



The Ontario Exhibit—Los Angeles Citrus Fair

ladybird. They will not devour other insects, but in the absence of their natural food prey upon each other, hence their disappearance with the scale.

Both the black and the white scale are easily discovered, while the red scale is so minute as to be difficult to detect, and an orchard may become infected before its presence is known. Since its nature has been learned, there has been much experimenting, and it is now under control. By an Act of the Legislature, each county is allowed three Horticultural Commissioners, who are appointed by the County Supervisors, and their duty is to superintend the inspection and destruction of all insects injurious to trees or fruit. In the orange growing districts the inspectors go about armed with a ladder and microscope (the latter to detect the red scale) and any suspicious looking fruit or foliage is carefully examined. If a single red or white scale is discovered, the tree is marked for the fumigator. It is then covered with a tent which confines the fumes of a gas preparation, and is thoroughly disinfected. When the entire district is finished, the inspection begins over again, thus making it impossible for the scale to gain a foothold. The commissioners and inspectors are paid by the county and the expense of fumigating is borne by the grower. If he refuse or neglect to comply, the affected orchard is declared a public nuisance, and proceeded against accordingly.

Since the success of the Australian ladybird, an entomologist has been sent abroad in search of a like remedy for the red and black scale and other injurious fruit pests, the State appropriating $5,000 for the purpose. His reports are of the most gratifying nature, and the horticultural officers have just received 30 species of beetles, new to this State, which Prof. Loebele is positive will destroy not only the insects injurious to citrus fruits, but all those that attack the deciduous trees of the State as well.

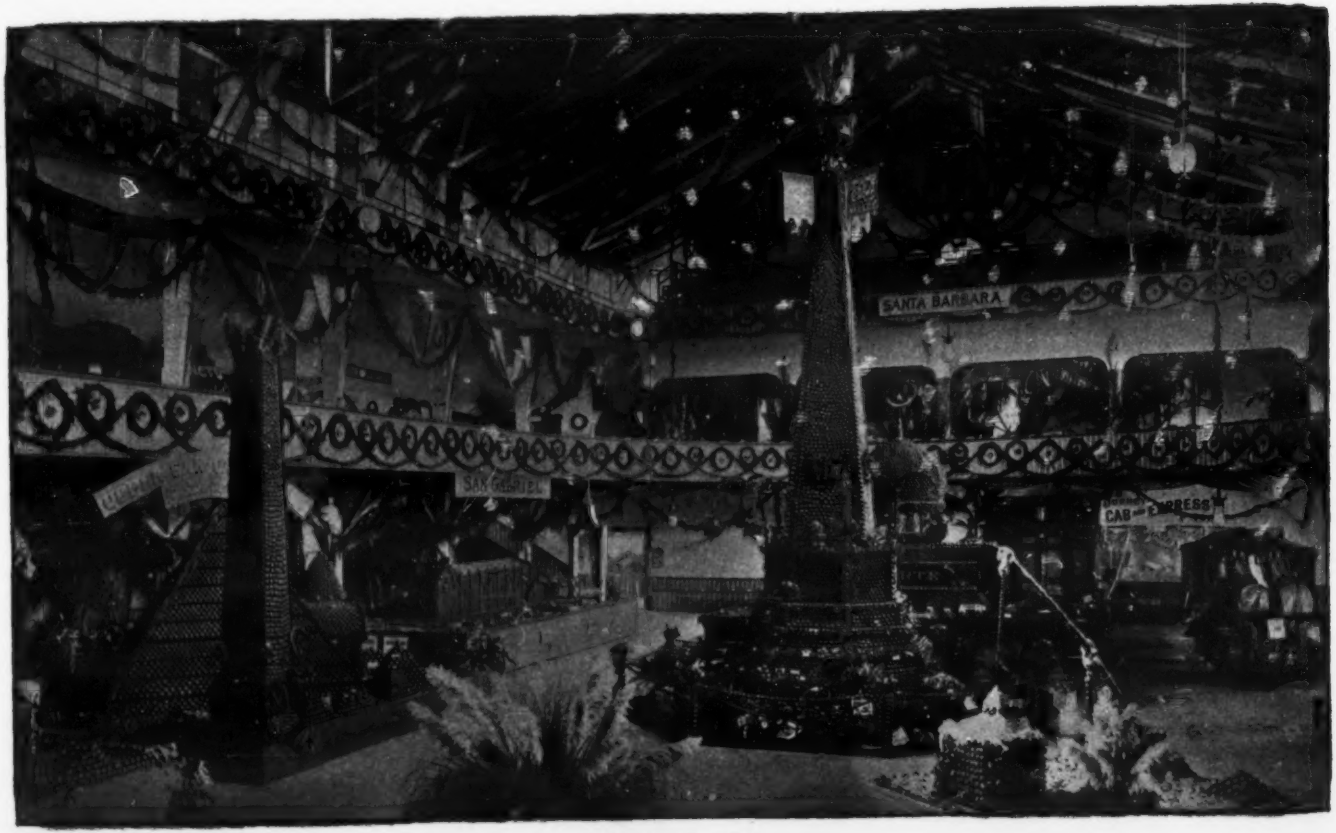
Prof. Coquillett, of Los Angeles, is now colonizing these beetles preparatory to distributing among the orchards.

The orange, which scientists tell us is a berry, begins blooming in California in March and continues until the end of April. In the hot summer sun the young oranges grow but slowly and are not distinguishable in hue from the foliage of the tree. It is when the snow-crowned mountains look down on the fruitful valleys that they assume the brilliant gold that becomes so effective in their setting of dark, rich green. Unlike other fruit, the orange is not ripe when its color is fully developed, and for years the reputation of California oranges suffered because they were marketed as soon as properly colored, though still as sour as lemons. It is yet two or three months before they have developed their full sweetness.

Florida is the strongest competitor and produces nearly three times as many oranges as California, but as the Florida crop ripens from Dec. 1st to March 1st, and California, from Feb. 1st to May 1st, they do not seriously interfere.

The United States now produces more than we import and the condition of the imported fruit upon arrival is such that it must be quickly marketed and consequently only affects the large cities where landed and their immediate vicinity. As we cannot compete with the imported oranges in price, it is only our finest fruit that reaches these cities. A very large proportion, however, is marketed before reaching the Atlantic Coast States, Chicago, St. Paul, Indianapolis, Cincinnati and Kansas City being great distributing points..

In picking, great care is used not to bruise or damage the fruit, each orange being clipped from the tree. At the packing house they are run through a grader, which assorts the sizes ready for packing. They range from 112 to 240 per box and a good packer will average from 65 to 70 boxes per day.



Los Angeles Citrus Fair
Pasadena Tower in the Center

Wages paid for packing is four cents per box, picking the same, and with other expenses, brings the price of handling up to fifty cents per box, while transportation to Eastern market costs from eighty-five cents to ninety cents more. A large percentage of the crop is sold F. O. B. at the place where grown.

The growers in the various districts are organizing associations for the more systematic marketing of fruit, as by united action uniform brands may be established, a more reliable market created and gluts avoided by sending every carload to the right place at the right time. This will also prevent the false branding of inferior fruit, which has wrought much injury in the past.

The present crop promised to be more bountiful than ever before, but the windstorm that swept over the San Gabriel Valley in the autumn, and the cold weather of December will materially reduce the quantity of fruit, although the damage was not so great as was at first feared.

Citrus Fairs have been held for a number of years past, and nothing furnishes such opportunities for artistic arrangement and brilliant effects as the deep-hued orange of all sizes, from the miniature Mandarin to the overgrown seedling that may almost be mistaken for a pumpkin, intermingled with the paler lemon, and relieved by evergreens and a wealth of such magnificent flowers as are found only in California.

Each year surpasses the preceding in the gorgeousness of the display. The State Citrus Fair, held at Los Angeles, a year ago, was transferred bodily to Chicago, where it was known as the Orange Carnival, and attracted thousands of visitors. March 2d was the date fixed for the opening of the State Citrus Fair this season, which was also held at Los Angeles.

Very liberal premiums were offered, and everything combined happily to make it exceptionally attractive. Plans are being made for an exhibit at the Chicago World's Fair, which shall in every way be worthy the industry it represents, and the State within whose borders are grown every natural product of our splendid galaxy of States.

Every year a Citrus Fair is held in Los Angeles at which the various towns and counties of Southern California are represented and where some remarkable structures are reared made wholly of oranges. There is much rivalry between the various localities, and Riverside, Pasadena, Redlands and Sierra Madre Navels compete side by side the gleaming rows presenting a beautiful appearance, the entire hall being a blaze of color. In the present paper some of the designs of the citrus fair of 1891 are shown, each being characteristic of the town and often artistic and beautiful in the extreme.

The Fair of the present year was, if anything, more beautiful than its predecessors and was enjoyed by the hundreds of tourists who make their winter home in the southern countries.

The Fair of 1892 opened its doors at Hazard's Pavilion, Los Angeles, and continued three days — fifteen hundred boxes of oranges being used to produce the rare and attractive designs exhibited. The hall was lavishly decorated with ivy, the fragrant pepper, thousands of palm trees and flowers of all kinds and descriptions. A prominent feature was a gigantic crown of oranges supported by columns wound with ivy and containing a huge pyramid of oranges.

Pasadena is the crown of the San Gabriel and its emblem which was made up of ninety boxes of oranges was a feature of the display. San Diego was represented by a fort of solid oranges, the base being made of lemons, fifty boxes being employed in its construction. Colton terrace represented this town — an orange horse — suggesting the joke colt-on-terrace.

Highland and Rialto, both famous for their oranges, made a fine showing for young groves. A gigantic lemon of lemons represented Ontario, while Redlands, the famous orange town, showed an orange high school, suggestive that the town had superior educational facilities, as the building was a model of the proposed school and that the children undoubtedly had a surfeit of oranges. The building was thirteen by thirty feet and was illuminated by electric lights.

Duarte made a remarkable display, while Orange County was represented by a gigantic orange composed of no less than three thousand smaller oranges. Riverside, famous for its groves, displayed a huge lemon formed of oranges, using three hundred and fifty boxes on the display.

Santa Barbara, La Cañada, Ballona, Long Beach, Porterville of Tulare had fine displays — the latter showing a branch having one hundred lemons. Vernon and San Gabriel, the latter the site of the famous Winston, Patton and Dobbins' groves, made a fine showing, while Pomona and Ventura and other towns added to the interest. The Fair upon the opening night was a revelation to the hundreds of eastern people on the floor. The morning papers announced a blizzard in the East — snow banked high in the cities and terrible storms on the Atlantic border—yet here in the same latitude was a wealth of semi-tropic verdure and fruits, taken from the fields the day before to illustrate the bounty of California.

The Fair was opened by Governor Markham who gave the four thousand people who were on the floor a stirring address in which he urged the dwellers in the orange belt from Marysville to San Diego to lend their energies to a representative exhibit at the World's Fair.

The Marysville exhibit this year was a surprise, as the impression has gone out that oranges were confined to the South, yet when the World's Fair Exhibit is made California, north and south, will vie in showing the people of the world orange trees in full fruit and flower in the city of Chicago.

EDWARD S. HOLDEN, LL. D.

BY JAMES R. ANDERSON

AS long ago as 1874, when James Lick was seriously considering the founding of an astronomical station on this coast, Professor Edward S. Holden and Professor Newcomb were called upon to formulate plans for the building and management of such an establishment. Mr. Lick was so well satisfied with Professor Holden's work, that through the medium of D. O. Mills, president of the first Board of Lick Trustees, he offered Holden the directorship of the Observatory, and his offer was accepted. The administration of the funds did not satisfy Mr. Lick, as the work did not seem to progress rapidly enough, so he cancelled the trusteeship of the first board, then of the second board, and finally appointed a third board with Capt. R. S. Floyd as the president. Capt. Floyd confirmed Prof. Holden in his position, and since that time the work has gone on uninterruptedly.

Prof. Holden is a man of perhaps forty-five years of age, rather grave in demeanor, but always an enthusiast on the subject of astronomy. He was born in St. Louis, and is a graduate of Washington University. In 1870 he graduated from the United States Military Academy, and then for a time served in the Engineer Corps of the Army. In 1873 he was made Professor of Mathematics in the Navy, and Astronomer at the Government Observatory in Washington. In 1876 he was sent on a Government mission to England, and two years later took charge of the Government Eclipse Expedition to Central City, Idaho. In 1883 he was sent to Caroline Island in the South Pacific Ocean in charge of another expedition.

He resigned from the Navy in 1881 in order to take charge of the Washburn Observatory at Madison, Wisconsin, and this position he held until he took up his permanent residence in California as President of the State University in 1885.

Nearly all the specifications and equipments of the Lick Observatory at Mt. Hamilton have been made at the instance of Prof. Holden who has given the subject almost undivided attention ever since the matter was first broached to him in London in 1874. The result is that while the endowment of this Observatory is much smaller than that of any other Observatory in the world, the money is so wisely applied, that quite as much and in some cases more, efficient work has been accomplished here than in other richer establishments. Prof. Holden's photographs of the moon have been of special value to the scientific world, and are regularly sent to the great German and Prussian astronomers.

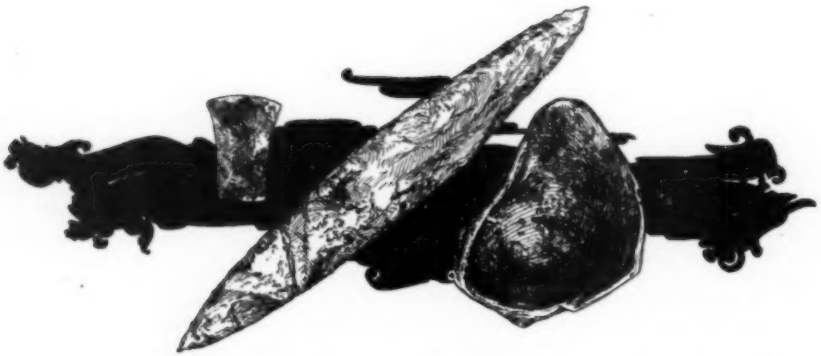
It has been and is Prof. Holden's main object in life to make the Lick Observatory a scientific and educational center for the whole world. He has spared no effort to draw about him eminent scientific men from every part of the world, and he can count among the 16,000 or more visitors to the Observatory from June 1888 to June 1891, such persons as the Earl of Rosse, Dr. A. Marcuse of the Royal Observatory of Berlin, E. D. Preston of the United States Coast Survey, H. F. Newall of Gateshead, England, Prof. T. C. Mendenhall, Chief of the United States Coast Survey, and many others.

From time to time students from various educational institutions are invited to Mt. Hamilton by Prof. Holden, and are given practical lessons on the workings of a great observatory.

With larger means at his command, Prof. Holden could make the Lick Observatory the finest establishment in the world, for the climatic and almospheric conditions of Mt. Hamilton are such as to permit an almost continuous series of unobstructed observations.

Prof. Holden is a member of the National Academy of Sciences and an honorary member of many other scientific societies in both America and Europe. He is particularly interested in the Astronomical Society of the Pacific which was founded in 1889, and which has flourished bravely since its very inception.

Besides carrying on such close observations ever since he took up his residence on Mt. Hamilton in 1888, Prof. Holden has contributed liberally to the leading magazines of both continents, his articles on the Moon in the Century Magazine attracting wide-spread attention when they first appeared a few years ago. Such articles, with their beautiful illustrations are a valuable factor in the popularizing of astronomical lore: but it is not often that one finds a purely scientific man who can use his pen with sufficient ease and fluency to render his scientific data attractive to the masses.



RECENT DISCOVERIES AMONG THE MOUND BUILDERS

BY WARREN K. MOOREHEAD

Field Assistant World's Columbian Exposition, Dept. of Archæology

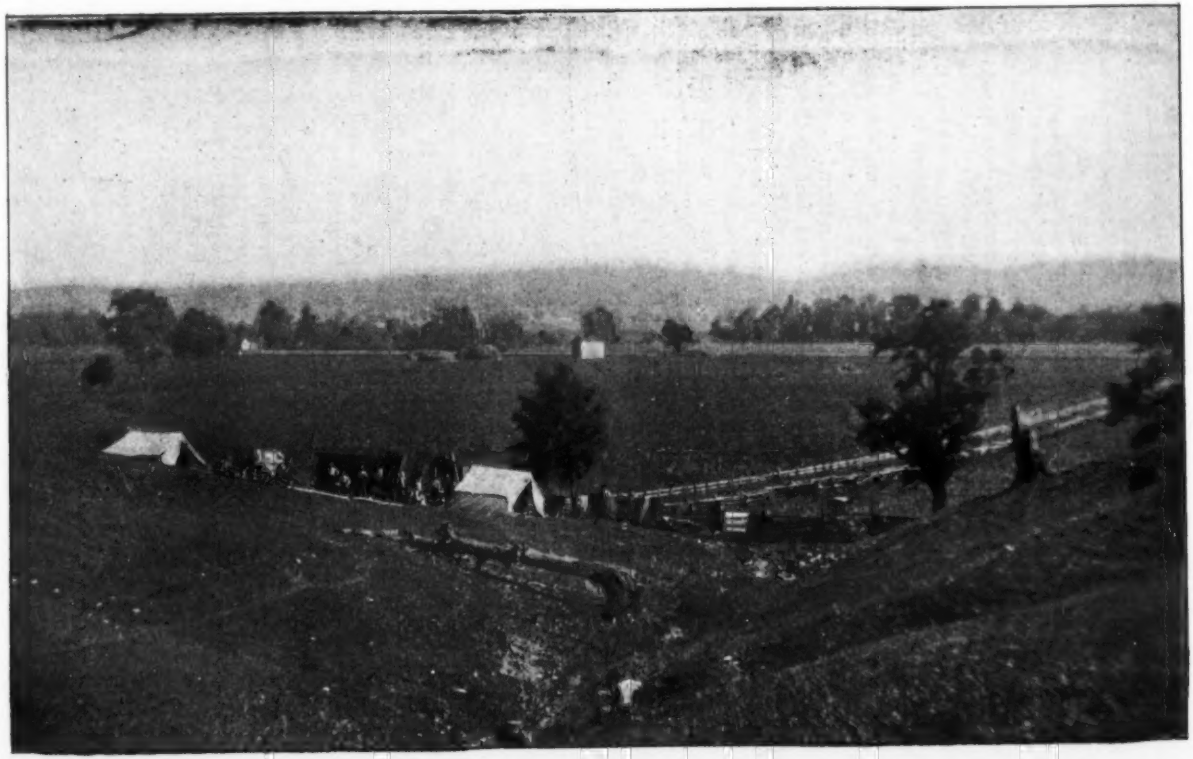
[The United States Government has determined that its treasures in the way of antiquities, and especially the remains of early man, shall be fully presented at the coming World's Fair. To this end a department of ethnology and archæology has been organized with Prof. F. W. Putnam of Harvard College as chief and Warren K. Moorehead as field assistant. The parties are engaged in opening the mounds in Ohio and have made some remarkable discoveries—some of which are herewith presented.]

THERE is no valley richer in prehistoric remains than the Ohio. The Tennessee and Cumberland valleys, the Wabash, the Illinois, the Arkansas, and the western tributaries of the Mississippi traversing the states of Missouri and Arkansas contain many evidences of primitive man's occupation. But none of them excel southern Ohio either in the number of interesting objects and ornaments from the burial places and village sites, or in the extent and massiveness of the earthworks and fortifications. Southern Ohio in pre-Columbian times was the home of two mound-building tribes. Burial tumuli and camping sites dot the Miami and Scioto valleys in great profusion.

These powerful nations were recognized by surrounding clans, were feared by their enemies, and were sought by those needing assistance. Their travel and their commerce brought to them articles from a great distance. We have found in their graves and upon the ruins of their homes, obsidian from the west, seashells and fossil sharks' teeth from the pleasant shores of the Gulf and the Carolinas, mica from the Alleghanies, cannel coal from West Virginia, copper from Lake Superior, galena from the Northwest, and images and carvings so far beyond the abilities of the Ohio savage to produce that they must have come from powerful southern nations such as the Natchez, the Cliff Dwellers, and possibly the Aztecs.

During the past summer work has been projected in the interests of the World's Columbian Exposition in the Miami and Scioto valleys. Many skeletons were found in Warren County in the former valley and there were noted indications of several large villages comprising two or three thousands persons each. But it was not until the survey located in the Scioto Valley that discoveries of a very unusual character were made.

There is a large tributary of the Scioto River known as Paint Creek. It flows toward the east and its valley



Camp of the Archæologists

is filled with the evidences of primitive man's occupation. There is a smaller branch of this stream known as the North Fork of Paint Creek which flows toward the southeast and is also rich in remains of the same character. It was in the valley of the latter stream that the survey pitched their tents upon the farm of Mr. M. C. Hopewell, near Anderson Station in Ross County.

In 1820 the Worcester Historical Society published the first volume ever issued in the United States devoted entirely to archæological subjects. Its title was "Proceedings of the American Antiquarian Society." For this volume Mr. Caleb Atwater of Circleville, Ohio, prepared several papers. Considered in the light of modern science they are well nigh worthless, but as Atwater was the pioneer of American archæology and labored under great difficulties we will be very charitable and grant him our meed of praise for his honest endeavors. He briefly mentions a large enclosure upon the farm of a Mr. Clarke (the land now owned by Mr. Hopewell) and called particular attention to a large mound in the center of the enclosure which he states was thirty-five feet in height, four hundred feet in length, and two hundred feet in width. He made no excavations and his examination of the embankment and the mounds upon the Clarke farm was entirely external.

In 1844 there were two young men, the one a doctor, the other a politician, living in Chillicothe, Ohio. They became interested in the antiquities of their county and having some means of their own, they devoted several thousand dollars and a number of years patient investigation of the interesting remains which were spread everywhere about them. Their work was incorporated by the United States Government in the first volume of the Smithsonian Institution under the title of, "Ancient Monuments of the Mississippi Valley." It is almost needless to add that their names were Squier and Davis.

Their work, covering four hundred large pages, has been an inspiration, a guide, an encyclopedia, to students of more recent times. While many of their conclusions have been hastily drawn and much of their work imperfectly projected, yet we cannot but assign them a high place in American archæology.

To the shame of intelligent Americans, their valuable collection from the mounds and graves which they explored, was purchased by the British Museum and is now on exhibition in that branch of the institution known as the Blackmore Museum at South Kensington. Although the collection was lost to the American public the work of Squier and Davis attracted such general attention that several museums were founded — prominent among which stands the Smithsonian Institution, — and a systematic study of the American aborigines was begun.

Between 1870 and 1880 a government institution, known as the Bureau of Ethnology, under the direction of the Smithsonian Institution, and the Peabody Museum of Harvard College sent a number of surveys throughout the west and in the Ohio Valley. The work accomplished by these surveys was considerable and of great importance. The stone graves of Tennessee, the Pueblos of the Southwest, the Indians of the plains and mountains and their customs and folk-lore, the mounds of the Mississippi Valley, the copper mines and effigy mounds of the Lake Superior region, and the tumuli of the South were extensively explored.

Toward the latter part of this decade Mr. Frank Cushing went among the Zuni Indians, learned their language, joined their secret orders, and obtained a wealth of information such as no white man ever possessed regarding the life of these strange romantic tribes.

This is but a brief summary but it will serve to call attention to the progress of archæological researches during the period named.

From 1880 to 1890 the interest was more general, and private individuals subscribed sums of money to sustain exploring expeditions to various parts of the country. Reference to the records of the Peabody Museum will show surprisingly large sums that were given by wealthy persons, and a perusal of the Reports of the Smithsonian Institution and Bureau of Ethnology will also show that Congress appropriated hundreds and thousands of dollars to sustain exploration among the aboriginal remains of both pre and post-Columbian times.

Prominent among the private individuals who contributed largely to the good cause was Mrs. Hemenway of Boston, who gave a great many thousand dollars to the Peabody Museum. A citizen of Ohio having resolved to explore the greatest earth-work in the United States, Fort Ancient (Warren County, Ohio), cheerfully employed $4,000 of his own money for this purpose.

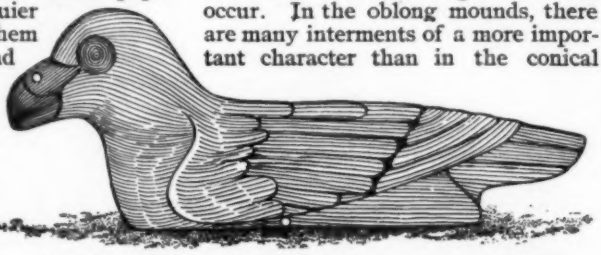
This brings us up to the present time. The World's Columbian Exposition has thirty-one surveys in the field. Other institutions have enough to swell the number up to forty. The Peabody Museum has just sent an exploring party to Honduras. A New York weekly paper will send one through the Cliff Dwellers' region and Old Mexico. Thousands of skeletons have been dug up, dozens of earthworks surveyed, photographed and modeled in plaster-paris. A great flood of light has been thrown upon the origin and movements of primitive man upon the American continent. The veil of mystery with which writers of twenty years ago were wont to surround those people whom they called the "Mound Builders" has been put aside. In fact, modern research solves nearly every question of importance, and hesitates only in the establishing of dates.

Hopewell Mound
Heap of Flint Discs, 7332 in number. Largest flint deposit ever found.

On August 29th, 1891, the survey, of which the writer of this article had the honor to be in charge of, located upon the farm of Mr. Hopewell. Reference on the part of the reader to the map on page 26 of Squier and Davis volume, "Ancient Monuments of the Mississippi Valley," will give a fair idea of the extent of the enclosure. We confined our attentions entirely to the mounds and village sites of the place. No excavations were made in the fort wall itself.

There are twenty-six mounds situ-

ated upon the 111 acres enclosed by the embankment. They vary in size from 18 inches in height and 30 feet in diameter to a mound 23 feet in height, 500 feet in length and 213 feet in width. All the smaller ones yielded a greater or less number of skeletons, many interesting altars and other objects. Many of these skeletons were covered by singular copper ornaments, copper hatchets and such pendants as the savage liked to adorn himself with, namely, bear and panther teeth, beads, mica, copper and shell ornaments. Pipes were also found having the bowl placed upon a broad base. Several of these were large enough to hold a handful of tobacco. On account of their popular shape, Messrs. Squier and Davis called them "platform pipes," and this name has been perpetuated by recent explorers. Three of these are shown in one of the illustrations accompanying this article.



Effigy of a Bird

No single tumulus explored within the limits of the Mississippi Valley has yielded such a variety and wealth of archæological treasures as has the large structure near the center of the enclosure, which we designated the "Effigy Mound." It was called an effigy on account of its resemblance to the human trunk. Its greatest diameter is from the east toward the west. The eastern end is high and bold in outline, the western rather low. There are undulations on the top and projections toward the northern side resembling shoulders. The builders had added to the mound at six or seven different periods, hence the irregularities in its outline and its consequent resemblance to the human trunk. The center of the mound is higher, and well indicates, by its gradual swelling, the chest. A little beyond the chest the mound is narrowed to a diameter of 160 feet, and this would indicate the waist. We speak of the mound externally, of course, when we say that it is a likeness of the human trunk. Internally, it gives no evidence of having been constructed in portrayal of the human body. Its likeness to that form is therefore purely accidental, and we have established the term more for the sake of convenience than to convey the idea of an intended effigy.

Mounds may be divided into three classes. Those upon the high hills, which are unstratified, those in the broad, fertile bottoms which are conical in form, and being stratified, and the mounds found on the river terraces, oblong in shape. In the stratified mounds, the greatest finds occur. In the oblong mounds, there are many interments of a more important character than in the conical tumuli. The Effigy Mound was not conical, and it was therefore unusually rich. The stratification throughout it was pronounced. In any of the cuts, one could observe a layer of sand, and so on to the summit of the structure.

A burial mound of such great dimensions as the Effigy could not be explored by a continuous trench or one large excavation. We had to divide the structure into seven sections, each 60 feet in width. These cuts were run north and south across the shortest diameter of the mound. Teams and scrapers were employed to expedite the investigation, and each section was dug out by scraping until a point four feet from the base line was reached. The base line is the original floor or bottom of the mound. The teams were then moved

Making a Cut in the Mound

to another portion of the mound, and laborers with pick and shovel carefully examined the remaining four feet, beginning at the south end, on the base line, and working toward the north.

In erecting the structure, primitive man had cleared the ground of underbrush and bushes, built a fire upon it and burned it hard, placed the bodies of his distinguished dead upon the level floor thus attained, and heaped the mass of earth above. So, by keeping along the hard-burnt base line, excavating was rendered easy, and the positions of skeletons and objects located without difficulty.

Section Number One, or the first trench cut in the mound near the eastern end, contained nothing. Section Number Two exposed several skeletons, accompanied by some interesting implements.

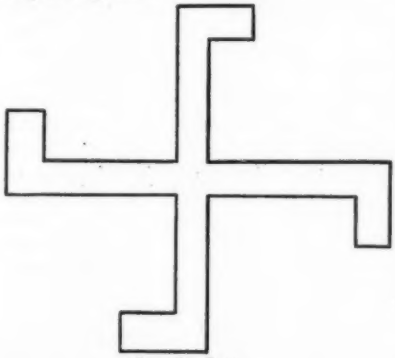
Foremost among these was a large adult skeleton, five feet ten inches in length, whose head pointed toward the south. The men gave him the name of "The King of the Mound Builders," and although the name is more sensational than scientific, its implication may not be contrary to the truth. At his head were copper antlers twenty-two by twenty-three inches. From the forehead and crown, and reaching to the base of the skull was a heavy copper plate, bent and made to conform to his cranium. In his mouth were beautiful pearl beads, upon his chest and abdomen were copper plates, while his entire person glittered with mica, pearl beads, shell ornaments and pendants. His faithful women had made for him a short skirt of rough cloth, similar to coffee-sacking in texture, and where the copper had come in contact with it, it was very well preserved. Upon the ankles were strings of copper, spool-shaped objects and beads. Near his right shoulder was a large spear-head of agate. A pipe of fair workmanship rested near his jaws.

Section Number Three was by far the most important. In it were discovered three adult skeletons accompanied by many objects, a mass of singular designs in sheet copper, two skeletons covered by a large layer of copper, a clay altar filled with ceremonial and ornamental objects, and many skeletons with and without objects. The burials in cut No. 3 were made promiscuously, that is, the skeletons were not placed at certain distances from the center of the mound or from the altar, nor was there any regularity observed in the placing of objects about the remains. Mounds are frequently described as containing skeletons placed in a square or circle with the heads, in the case of a square, with each row pointed the same way. In all our mound exploration we have never found all the skeletons pointed in the same direction. There seems to be no preference for any one cardinal point above another.

Particular attention is called to the evident lack of conformity in the burials in this mound. Because of the

King of the Mound Builders

great richness of the structure we would assign it a prominent place among the tumuli, the contents of which have given us substantial information concerning the origin of the Ohio primitive man. If there ever was any intention on the part of the mound-building clans to exhibit their knowledge of geometry or artistic arrangement of the burial places, we would have supposed that such knowledge would have been made manifest in this structure. Bnt there is no evidence of an ability to make accurate measurements, nothing to indicate a uniform method in interring the dead. Even the most wonderful finds seem to have been carelessly heaped together.



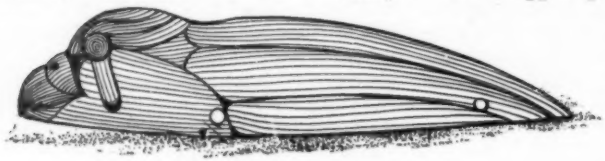
Swastika Cross

Beginning at the south end and proceeding toward the north in Cut No. 3, we found a deposit of copper several feet above the base line. There were 120 separate designs in this deposit, all of which had been wrought from sheet copper. They varied in size from two to three to seven by ten inches. In all our mound opening experience, nothing has ever been found which approached some of the designs occurring in this deposit in archæological value. There were several good likenesses of the Swastika cross. When the first one was picked up, we thought the resemblance of that famous religious emblem purely accidental, but as another and another were secured and inspected by our wondering eyes, we became convinced that the crosses were not conceived and manufactured by those ignorant of its symbolism. The form of the cross is familiar to many of our readers. A sketch of it is shown in the accompanying figure. Like the Greek cross, the arms are at right angles. Each arm is of the same length, but there are projections at the end of each, an inch or so in length, and these give the emblem its great significance.

The cross of the Hindoos, of the Phoenicians, the cross that the French anthropologists have found upon the pottery and in the tombs of aboriginal man all over Europe in an Ohio mound! Were these things found alone, we must conclude that their presence was due to the influence of the whites. But associated with them were fanciful designs such as fish, combs, eagles, scrolls, diamond-shaped stencils, and leaf-like designs. Not far removed from this deposit were vast quantities of obsidian implements, effigies of the bird, beaver and fish, all carved from stone or made of terra cotta. Some of these are shown in the illustrations. They are Southern in character and from the fine workmanship evinced in them, we feel confident in making our assertion that neither the Indian of post-Columbian times nor the French or English trader ever saw or heard of them, let alone making them. The white man gave the Indians of the Ohio Valley beads, tomahawks, iron kettles, wampum, medals, looking glasses, and knives. In short, he presented them with articles which would be of value. That he would give them bird, animal and fish effigies, and, above all, the Swastika cross, is preposterous. We make bold to say that there was not a trader or a pioneer that ever heard of the cross or knew of its use. The Swastika is so little known to-day that it is mentioned in but two encyclopedias, and aside from works of a religious or anthropological

character, one cannot find mention made of it.

The natives of Mexico employed obsidian in vast quantities, and were adepts in chipping it into desired forms. We refer particularly to the Aztecs. The Spanish chroniclers inform us that the Aztecs traded very extensively with Northern tribes, also, that the natives of the Gulf States traded shells, mica, fossil shark's teeth, for copper and fine flint implements. The effigies (the great number of which cannot be shown in this article)



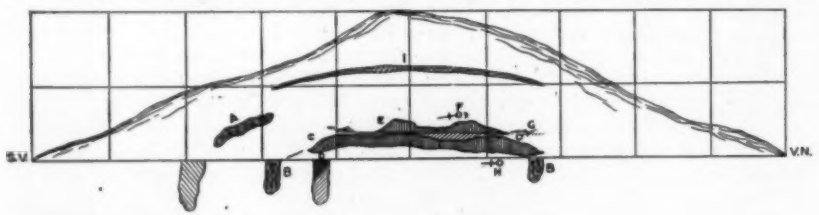
Effigy of a Bird from the Mound

represents Southern life, the obsidian Mexican and the Busycon and Pyrula shells North Carolina or Florida nations. Perhaps the Swastika was known to the Aztecs. Several crosses have been sculptured upon the temples and tablets of Mexico and Central America. It is, therefore, quite reasonable to conclude that the more Southern nations knew its use. The savage of the Ohio Valley did not and therefore placed it with a mass of copper, most of which was designed for ornamental use only.

The second deposit of copper lay fifteen feet north of the first and upon the base line of the mound. It covered two decayed skeletons. The objects were fairly well divided between copper plates and celts. The largest axe ever found in the United States, weighing thirty-eight pounds, twenty-two by five inches, lay near the western edge of the deposit. It is shown in the head-piece of this paper and will be readily recognized in the illustration. The other celts were smaller, some of them being but an inch in length, while the average weighed two pounds and were six by three inches.

The copper plates were of nearly uniform size. The copper in them had originally been sheet and was undoubtedly hammered thin in a cold state. They varied from a sixth to a quarter of an inch in thickness, were eight or ten inches in length and six or seven inches wide. The corners were slightly rounded. Occasionally the plates were perforated for suspension.

Beneath the copper lay two badly decayed skeletons. Copper usually preserves anything it comes in contact with. Yet in spite of the great mass of metal above these skeletons their bones were almost dissolved into dust. The remains were so far from the surface, atmospheric agencies could not affect them. With so much copper over them, all conditions were favorable for their preservation. We are, therefore, convinced of the great antiquity of the mound. Near the



A Mass of burnt bone.
B Pits 3 feet deep filled with small stones.
C Burnt earth, very hard.
D Pit of fine black earth, with 6 inches of charcoal on top.
E Altar.
F Skeleton, with copper plate.
G " above clay, last of altar.
H " below clay, last of altar.
I Layer of bark.

In the Trenches

Clay Altar from the Hopewell Mound, with Beads, etc.

northern end of the cut lay an altar three by four feet in length with several bushels of interesting objects and ornaments, all of which had been melted and run into one general mass. The copper was melted, the bone implements, the ornamental shell disks, and many of the effigies were cracked and chalcined and very nearly destroyed by the intense heat. A conglomerate mass in which are hundreds of ornaments of all conceivable materials was taken from the center of the altar. It is two by three feet in extent.

Nearly all the mounds in the Sioto Valley contain altars. Very few have been found in the tumuli of other sections of the State. The smaller altars contained nothing, the large ones are usual filled with the possessions of the builders of the mound. Whether the offerings which they have deposited in the altar fire were in commemoration of the dead or in the observance of some ceremony, we are unable to say. The altar itself is invariably composed of clay and was molded in situ. In the case of the larger altars the rim about the cavity is eight to ten inches in width. The cavity is four to six inches in depth with sloping sides. It is usually burnt a bright brick red.

Cuts Nos. 4 and 5 contained many skeletons. There was nothing remarkable with any of them.

Cut No. 6 was almost as interesting as No. 3. There was a larger altar in this cut than in No. 3 and eight or ten times as many specimens in its cavity. Near the center of the cut were two skeletons over whose heads stones had been neatly arched. The skulls were preserved and we succeeded in removing them nearly entire, although the other bones of the body were badly decayed.

Our conclusion that the builders of the Effigy mound were acquainted with the Mexican civilization and cotemporaneous with mound-building period. There were hundreds of

Stone Bowl from Hopewell Mound

obsidian implements such as have been briefly mentioned above. Many of these were of the finest workmanship varying in length from six to ten inches and in width from three to five. Their edges were sharp and clearly defined. Barbs or shoulders for attachment of shafts have been chipped with unfaltering precision. Some of the obsidian had been worked into long and delicate knives. Many of these were slightly curved like a sickle, while others were double-edged and dagger-like. Thirty or forty were secured entire but the great majority had been cracked and broken by the heat of the fire which,

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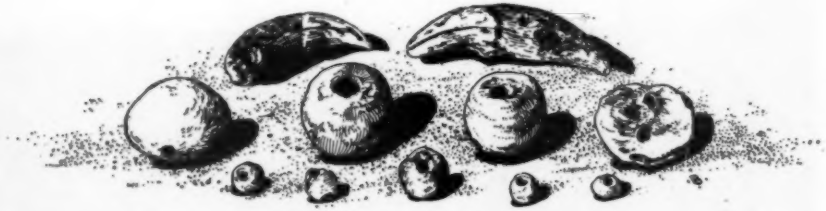
as in the case of the first altar, was built upon the deposit. How unfortunate, that the builders resorted to this destroying element. How valuable to science would be these implements, effigies and ornaments, had they been deposited as were the two masses of copper.

There were pipes, large bear teeth, copper spool-shaped objects, thousands of beads, little statuettes resembling human and animal figures and many other things. One of the pipes represents a duck standing upon the back of a fish. The execution is admirable, all the parts of both being clearly defined. The hole for the stem runs through the mouth of the fish and the bowl is in the back of the duck. A carving three inches in length and an inch in thickness represented a human face. The right side is badly damaged, the left side and the crown is entire. The nose is long and almost abnormally large. The cheek bones are not high and the chin is receding. Copper brooches and buttons covered with silver, bone beads, delicate bone needles, sandstone tablets, and thousands of flint-flaked knives were taken from the deposit. All told the finds filled fifteen large boxes. This will give an idea of the magnitude of the find. After the taking out of the second altar there were no more important discoveries. The six great deposits of this mound places it ahead of any similar structure in the world in archæological importance. Any one of four of the six deposits would have amply paid for the expense and time necessary for the exploration.

In all of the archæological work projected in southern Ohio prior to the year 1891, no certain light had been thrown upon the origin of primitive man. Valuable discoveries, it is true, were made. Many facts were established. Theories were promulgated touching upon the southern or Mexican origin of the mound-building clans. No one found sufficient quantities of foreign substances to warrant the assertion that the man which it is our purpose to describe came from the south. The material in the Effigy mound is in our opinion conclusive evidence of his southern origin. A careful study of the enormous number of specimens and skeletons to be exhibited in Chicago in 1893 on the part of those who are skeptical will convince them of the truthfulness of the assertion. If the Ohio primitive man came not from the south how are we to account for the thousands of Mexican obsidian implements, effigies, representing southern life, sea-shells, mica and sharks' teeth, which have been taken from this burial place.

There are just as important enclosures and tumuli in the Ohio Valley to be explored. We feel assured that further examination of the territory will but support the conclusions derived from the contents of the Effigy mound.



EL CAÑON DE LA VIEJA.

By Don Arturo Bandini.

FIFTY miles northeast of the town of Oposura, in the State of Sonora, Mexico, lies the beautiful valley of Usabra. The Mexican hunters will solemnly tell you that it was once inhabited by Adam and Eve; in other words, that the Garden of Eden was located in this favored spot. Enchanting and inviting as this valley is, in it there is no house, farm, or cattle ranch; all is still and peaceful; the reason for this is, that just across the range are the hunting-grounds and villages of the Yaqui and Mayo Indians, two of the bravest and most warlike tribes in the Mexican republic.

Well may these Indians guard their grounds; for they fairly teem with game; deer, buros (the latter a species of warm-land elk that will dress as high as a thousand pounds), and antelope; here, also, is the haunt of the wild turkey, brush and mountain quail, pheasants and a great variety of other feathered game. For fur-bearing animals, there is the jaguar, or Mexican tiger, "tigrillos," wild-cats, red and silver foxes, etc. I could go on and enumerate a number of animals that are totally unknown in the United States.

The Usabra Valley is almost completely surrounded by high mountain ranges, whose summits seem to pierce the very skies. There is no grander sight than the effect of the sunrise on these mighty heights.

As the first rays strike the loftiest crests, behold, a dazzling illumination takes place, owing to the reflection of the light on their quartz-crowned tops; and, as the king of day mounts higher and higher, the golden shafts touch peak after peak, 'till all the lofty pinnacles seem tipped with fire.

The inhabitants of this bold and attractive country are in perfect accord with their surroundings. Here the aborigine is almost free from the vices that degrade his brethren who are brought in too close contact with our civilization. He is free from the wiles of the trader, and his potent but destructive fire-water, and holds his lands, not at the caprice of his Government, but by the right of might, and, what is still more binding, the right of untold years of previous occupation.

I could tell of many curious rites in connection with their festivals, rites both military and religious, which are always closely allied. These tribes were originally, and are still to some extent, fire worshipers, always regulating their war expeditions by certain omens, such as phases of the moon, heat of the sun, brightness of the stars, meteoric showers, etc.

There is something more which is worthy of mention regarding these people,—their dress. Deerskin, as with most American Indians, forms the principal material; but their ornaments are far more beautiful and rare than those of other tribes. The leather is so perfectly tanned that it is as soft as broadcloth. The garments of many of the principal men are embroidered from moccasin to war-bonnet with tiny shells of all shapes and colors; but the richest, most atrractive and striking of their costumes are those embroidered with humming-bird feathers. The ruby throat, the emerald, the golden and many other species of these little birds furnish their delicate and highly colored plumage for the ornamentation of these semi-savages. I leave the reader to imagine the appearance of a stately Indian chieftain clothed in such a garment.

Now that I have to some extent introduced the country and its inhabitants, I will proceed to relate an adventure that I had in this neighborhood, an adventure so odd, strange

and unexplainable that to this day I do not know whether it was a dream or a reality. If a nightmare it happened during daylight, and what is more curious other hunters have bestrode this quadruped in or about the same spot.

One beautiful December morning, two or three days before Christmas, my brother and a fellow-hunter named Regalado (this name translated into English means "exquisite gift") and myself were sitting on some logs in front of our camp conversing and wondering what our friends in civilization were doing,—whether they were thinking of us way out in the deserts, etc. I remember doing some tall thinking all to myself while looking upwards at the fleecy clouds as they slowly sailed across the blue sky and lodged against the sides of the giant peaks; heartily did I wish myself at home,—never dearer than when one is far away and dangers on all sides may prevent a return to that sacred spot. From these happy-sad longings I was aroused by the voice of Regalado saying, "*Ola compañero, despierta*" (say, comrades, wake up). We will take it for granted that our friends are solicitous about us, and that we are constantly in their thoughts; but let us think of ourselves now: day after to-morrow is *noche buena* (Christmas). "What do you say to our going up the mountain-side after some *chiguis* (wild turkeys)? You know that the *chiguis piñoneros* are the best. I tell you, Turito those *piñoneros* are smart; they live on *piñones* (pine nuts), so they are always fat and prime, *buenos* for Christmas. What do say? Shall we go?"

Though turkey-hunting was common enough with us, yet I gladly accepted the invitation in order to divert my mind from thoughts that were becoming oppressive. After seeing that our rifles, pistols and *machetes* (heavy knives for either defense or cutting our way through thick brush) were in good order we started. We had not gone far when my brother, who had stayed behind to take care of camp, sang out, "*Cuidado con la vieja, muchachos*" (look out for the hag, boys). I returned him some light answer; but I noticed that Regalado's face paled a little, and that he crossed himself. Having had at different times ocular proof that my companion was a man of dauntless courage, his actions on this occasion surprised me not a little. I had often heard of the dreaded hag of the Usabra, but had considered it a superstition, and consequently had paid no attention to the tale.

As I have already remarked, the Usabra Valley is surrounded by lofty mountains into whose very hearts run great cañons not like those of California, that ascend toward the ridges, but great gloomy box cañons that become deeper and darker as you go in. Toward the entrance of one of these gorges my now silent companion and I directed our steps. I tried by various ways to rouse Regalado into something of his usual liveliness, such as chaffing him about a certain *Señorita* in California, or speculating on *la vieja de Usabra*. At the name of his *Dulcinea* he would brighten up a little; but at the mention of the hag he would look around warily and whisper, *calla* (hush).

It was a tremendous cañon before whose mouth we now stood; perpendicular in places, running up a thousand or more feet of sheer wall. Huge rocks balancing on pebbles looked as if the least jar would launch them into space. In other parts the mountain-sides are clothed in black ironwood, mahogany, pine, oak and other somber woods. It is altogether an uncanny looking spot. If the gorge seemed dark and chilly at the entrance, what would it be deeper in? I called Regalado's attention to these facts.

"Yes," said he, "it looks very uninviting, but we are not going into that tomb; we are not on a prospecting tour, but hunting *chiguis*, and *chiguis* are not found at the bottoms of cañons, but on their sides, so come on."

Slowly and cautiously we began our climb; soon the giant trees shut out the

sunlight, and we were in a twilight gloom, nothing but the "chir chir" of the mountain cricket disturbed the oppressive silence.

Let the reader understand, that in these remote solitudes death threatens on all sides; nonpeds, bipeds, quadrupeds, centipeds and milipeds for that matter are always on the alert for the unwary and inexperienced. In these fastnesses lurks *el vaso* (the lights), so named on account of its similarity to that organ. This is unquestionably the most deadly of the American animals. I doubt if its equal exists in the known world. I have read most of the standard treatises on our poisonous animals and those of foreign lands, but, as far as I can judge, *el vaso* is far ahead of any of them in the virulence of its venom. When not concealed in its lair in some hollow trunk it haunts the springs where cattle and horses are accustomed to drink, and taking a position on some convenient limb, hangs bat-like to await its prey. Here is full scope for its agressiveness; silently it drops on the first drinker, a snort, a plunge, and the stricken animal staggers for a few feet, then drops. He has taken his last drink! Other victims follow; no noise is made by this destroyer: "quiet as death" is well illustrated in the work of *el vaso*. Fortunately for stockmen, this animal is not common; with a big reward in view for its destruction, the white and Indian hunters make it the special object of their hunts. A complete description of *el vaso* and its habits is given by Don Manuel Gustios in his book entitled "Animales Venenosos de México."

Even the vegetable kingdom bars your progress not only with its thorns and density but with numerous poisonous vines and creepers that seem to reach for you on all sides, and to touch which causes intense pain. Above all to be avoided, is the terrible *yerba mate* whose poisonous exhalations will cause insanity should you through ignorance use it for a couch and continually inhale its deadly gas. With all these pleasant prospects in view, we commenced our climb. Going up five or six hundred feet we arrived at the top of a knob that arose abruptly from the mountain-side; here we stopped to listen for the cry of the turkey.

Below us was a green sea of leaves swaying and undulating under the strong wind that came sweeping up the cañon. But, far above us was the grandest sight of all; there, two thousand feet or more directly over our heads, rising from the opposite side of the gorge, hung great rocks, black and menacing, though it was fully five hundred feet directly from where we stood to the other wall, yet had any of those boulders fallen from the very apex of this tremendous half arch it would have landed far behind us. That there was danger of this occurring we had evidence enough, as all around were rocks that had fallen from the height and buried themselves deep into the hard ground; others had dropped on trees and reduced them to splinters. Unpleasant possibilities would suggest themselves, but were suddenly driven from my mind by the distant "peek peek" of the turkeys. Following the sound, after more difficult ascending and descending, we arrived in the neighborhood of the game. These birds are exceedingly wary, and we had to approach them with the greatest caution. We could now hear the feeding "peeble peeble" of the hens with the "gobble gobble" of the cocks. At last peering through the brush we saw a sight always dear to the hunter's eye: in a little clearing perhaps two acres in extent was a large flock of turkeys, great magnificent cocks, strutting proudly about, now and then drooping their wings with a loud "thung." Each selecting one of the largest, we fired. With a loud whirr the flock flew away, but sufficient game remained for our bag.

"*Bien, muy bien,*" said my companion, "now for a dozen *perdices*

(mountain quail) on our way back to camp and our larder is ready for *noche buena.*" "*Amigo,*" said I, "you shoot the *perdices* on your way back, I am going farther into the mountains and try to get a *cimarron* (mountain sheep). You know I need a pair of *chaparreras* (skin overalls tanned with the hair on, used for riding in the brush), and now is the time to get them. Tell my brother that I will be in camp before dark, so *adios.*" I was walking away when Regalado said: "How far do you intend to go, and on what side of the cañon will you return?" adding at the same time, that the side on which we now stood was the best. I told him my intention was to go on a mile or two farther and then return by the bed of the gorge, as the path there seemed smoother and certainly more even. "Choose any other way than the bottom of the cañon," he said earnestly, "avoid that path I beg you; if you do not you will surely regret it and forever spoil all the pleasures that we have had or may have hunting in the Usabra." "But, *compañero,*" I said, "what is all this mystery and terror about? I have often heard of the hag of the Usabra, but surely you don't believe the idle tale. Some prospectors have probably found a rich ledge in this locality, and, not being able to work it at present, have invented this yarn to keep others away. Come," I continued, "own up that there is really no foundation for the story, and that you do not know any one who ever saw the apparition."

"You are mistaken," he answered promptly. "I know some bold and truthful hunters who have seen the *vieja* in this cañon. But the day is waning; some other time I will tell you more. Before we part I beseech you again to keep out as much as possible from the bottom of the cañon; and more, if you should see *la vieja,* conceal yourself and remain quiet, but if she stops when near you and begins to sniff the air, as a hound when scenting, *tírale, y dí en el nombre de María.*" (Shoot at her, and say in the name of Mary.)

"*Bueno,*" I said, more impressed at his earnestness than I was willing to acknowledge. "I will do as you say, *amigo mio;* if the *vieja* passes me by, well and good; but, should she object to my scent, I will try the effect of a good Sharp's 45–110 on her anatomy!" Regalado looked shocked at my levity, but said nothing more, and we parted.

Generally I prefer to hunt alone. Hunting in pairs is as a rule bad policy; but after the departure of my comrade the gloom seemed to settle deeper, and the air grow colder in the great gorge, while the "chirp" of the crickets sounded louder and more lonely. Once I half made up my mind to follow my friend and return to camp. Was I afraid? I think not; but I felt inexpressibly lonesome. I have been in many places as far retired from the haunts of man, but never experienced such utter solitude as in the cañon of the Usabra. Shaking off, to some extent, this unpleasant feeling, I once more pursued my way up the cañon. I kept out of the wash as much as possible, but in some places could not avoid it, as the walls rose straight for hundreds of feet, often converging as if ready to topple and overwhelm me. Once or twice I obtained glimpses of mountain sheep, but out of reach, not of the rifle, but of a possible hit. The sight of the *cimarrones* drove all thoughts of Regalado and his cautions from my mind; and I pursued the hunt with renewed ardor.

Traveling now with extra caution and looking sharply on every side I advanced deeper and deeper into the mountains. At length, feeling considerably done up, I sat down to rest for a few minutes, and to think whether it might not be best to cross the cañon and hunt the game on that side, at the same time working my way towards camp, when, looking up, I saw a band of five *cimarrones,* led by a large ram, slowly winding down

the mountain-side, and heading towards where I was sitting. From the formation and lay of the land I knew that the sheep would pass within easy rifle shot—say two hundred yards. To any one who has ever hunted these animals it is needless to tell of their extreme shyness, keen scent and sharp sight. I knew that if I moved they would see me. There was nothing to do but to remain quiet, trusting that the color of my buckskin suit, which somewhat resembled in shade the surrounding rocks, would deceive at a distance even their quick sight. From the wind I had nothing to fear, as it was completely in my favor.

How stately the "bighorns" looked and with what decision they put down their forefeet when they walked. The leader, who was ten or fifteen feet in advance of the rest, I already looked upon as "my mutton." The big fellow would now and then pause, toss his great horns and try with his keen scent the purity of the air. But it was not against a human enemy that he was guarding his followers: the chances were that in these almost inaccessible solitudes he had never seen or even scented one of that species; his watchfulness was for the jaguar, the *tigrillo*, and mountain lion, all implacable enemies, and with whom he was a special favorite. The sheep had now arrived at good range; a few seconds more and they would be safe over the brow of the cañon; now was the time. I imitated the whine of the jaguar, "oo-ii-nn." With a loud snort the band came to a dead halt, but only for a second,—time enough and to spare. At the crack of the rifle the leader reared, pawed the air once and then pitched head-foremost down to the bottom of the cliff. I sent two or three bullets singing after the rest just to see them give some of their wonderful leaps, but not with the intention of hurting them, for I had secured what I needed.

But now, to get at my game, there were two alternatives: to go down from where I stood; or go back at least two hard miles where the descent was comparatively easy. With the recklessness of the hunter I chose the first and most dangerous route. I proceeded to make my preparations accordingly. From my waist I unwound the light *riata*, or lariat as the Americans call it; which name by the way is incorrect. *Riata* is the word. *La* is the article the; thus *la riata* signifies *the riata*. Americanized lariat is the result. My *riata*, which was forty-five feet long, I took by the middle, and placing it over a stout bush lowered myself to a ledge some fifteen feet below; then, letting go one end of the rawhide, I pulled it down to me. This operation I repeated three or four times until I arrived at the last ledge, a platform of stone. From here it was fully forty feet to reach ground, from whence I could make the rest of the descent clinging to rocks and bushes. Fortunately in this place I found, jutting out from the face of the cliff, a horn-shaped rock that just answered my purpose; to it I made fast one end of the ever-useful *riata*, and going down hand-over-hand, helping myself by bracing against the rocky wall, soon reached better ground.

"Wah, big chief!" I said, but immediately collapsed when I saw my impromtu ladder dangling from the face of the precipice. I had been so anxious to make the final descent that it had not occurred to me that the other end of the *riata* would naturally remain fast above, and I should be compelled to abandon my faithful servant. Necessity is never more the mother of invention than in the life of a hunter or pioneer. A way out of the difficulty soon appeared. Lifting my rifle I took steady aim at the exposed part of the loop under the projecting rock and fired. *One* heavy bullet did the work: it cut the strands and down came my helpmate, mutilated a little it is true; but for the services it had rendered me I would splice the cut so carefully that no one could ever detect the break.

Gathering up all my belongings once more, I scrambled, slid and tumbled my way to the bottom of the gorge. There I found my *cimarron*, a splendid fellow. His great horns alone must have weighed ever twenty-five pounds; and his skin would make a handsome pair of *chaparreras*. Altogether I was well satisfied with the day's work. The sun, I imagined, had long since crossed the meridian, although in the deep cañon it was impossible to tell. Far up the mountain-side I could see through the depressions of the walls the sunlight resting soft and mellow against the giant peaks. How inexpressibly small I felt in that great rift; but I could lose no time moralizing; the *cimarron* had yet to be stripped of his skin and horns, and the shelter of camp regained before dark. I set to work at once, and being somewhat of an expert it did not take very long to finish the operation.

Tying up the skin and horns as compactly as possible, I started on my return to camp. Strange that as I picked up my bundle, and before I had made one step homeward, there came to my mind with startling distinctness Regalado's injunction, "Whatever path you may choose, I beg of you avoid the bottom of the cañon." Yet here I was about to take the very route against which I had been warned. But how could I do otherwise? Even when I should find a convenient spot to climb the mountain-side I would have to cut and push my way through the thick and thorny bush, and scramble up and down the numerous small but steep cañons that debouched into the main one. Hand free I could accomplish this; but with my heavy load it was out of the question. As far as could be seen from where I stood, the bottom of the wash was quite clear and infinitely easier to travel; so in spite of Regalado's advice this must be my path. After traveling a couple of miles hunger and fatigue began to tell; but the surroundings looked too gloomy and uninviting for a halt. I would have to keep on until I should find a spot less walled in and more congenial.

In this country continual watchfulness is the price of safety; with the knowledge of this constantly in mind I hurried my footsteps, at the same time keeping a sharp lookout on all sides. Yet I could not resist stopping now and then to take in more fully the ever-changing and awesome grandeur of the scenery. In places the sides of the cañon were exactly like walls straight up one or two thousand feet; in others they were terraced in inclined planes; on these terraces grew large trees of many varieties. Then again the mighty walls would be concave perhaps half way up, and then converge till the opposite sides were seemingly within a few feet of each other. Occasionally I cast furtive glances upwards at these menacing heights, and hurried again as fast as my heavy burden would permit.

At last I arrived at a spot that, compared with the ground I had left behind, looked more inviting for a resting-place. While the sides were still quite steep, yet they afforded some foothold; and the timber being less dense made the surroundings brighter. Here then was a good place to rest and break my fast. Selecting a little nook between two large bowlders I thankfully dropped my weighty bundle, unbuckled my belt with its heavy revolver and *machete*, and standing the rifle against one of the bowlders sat or rather dropped down on the white sand. I felt too tired to eat; but soon the feeling wore off, and I enjoyed my repast. This done, I went to the stream, bathed my head, face and hands, and returned once more to my nook to enjoy a smoke; in doing this I had resolved to take my time and make myself comfortable. Leaning back on the bowlder nearest me, and facing down the cañon I thought of the lines:

> Sublime tobacco, that from East to West
> Cheers the tar's labor and the Turkman's rest.

Smart fellow, I thought; he knew something. All this time my gaze was directed upward, where I could see gauzy clouds now and then sail across the narrow expanse of blue far over my head.

From this happy state of mind and body I was suddenly aroused by a sound half drone, half whistle, the like of which I had never heard before nor have I since. What could it mean? Almost instantly, however, some foreign intuition warned me to remain perfectly quiet, so strangely opposite to our general course to actively and instantly prepare for danger in this most hostile country. At first I could not locate the sound, but soon felt certain that it came from down the cañon, and more, that it was drawing nearer and nearer. At times it seemed all around me; the whole cañon was full of it. I remember some leaves lying near appeared to quiver and rise on their tips, as if attracted by a magnet. I was becoming confused, and felt that I was losing by degrees all sense of place and objects. By a supreme effort of will I rallied my failing senses, and determinedly fixed my eyes on the bend of the cañon, from behind which I was now sure came the sound, low at first, but expanding as it came, funnel-like, till it wrapped me completely in its charm. Nearer and nearer! The strain was now indescribable. Something must occur, and that speedily; and something did occur. Slowly around the bend appeared the gigantic form of a woman,—a gigantic hag rather. Like lightning came the thought *la bruja de Usabra* (the hag of Usabra).

Benumbed at the sight of such presence, yet a fascination I could not resist kept my sight riveted on that infernal substance or delusion. The great stature, the long skeleton arms bare to the shoulder, the gray, straggling hair, and the face,—the mummy-like face with profile of chin and nose that nearly met. Small space was there for a mouth between that nose and chin; yet from a dent there issued that whistling-droning chant. On and on came the terrible shape. At a short distance from me it stopped abruptly, and hound-like began to sniff the air. As if in a trance, Regalado's words came to my nearly paralyzed mind: "Keep perfectly still, and let her go by; but if she should stop near you, and begins to sniff the air like a hound when scenting, *tírale, y dí en el nombre de María.*"

The time had come; the great hag had stopped; slowly she turned her head, and the yellow topaz eyes glared into mine. I could not look long into those orbs and live. Suddenly I became aware that her strange all-powerful chant had ceased; and the spell that bound me was now broken. With a quick motion I seized my rifle. This time eye met eye over the polished barrel;—a report that within those narrow walls sounded like thunder went booming with stunning echoes up the cañon. Were those screams that intermingled? I could not tell; for suddenly I seemed to be in a vacuum. I remember springing to my feet, gasping for air; and then all was blank.

* * * *

When I recovered my senses complete darkness surrounded me; while far down the cañon I could hear the faint report of rifles. I knew that they were signals to guide me back to camp. Slowly and painfully I arose and began my staggering march down the gorge. I left everything behind,—rifle, pistols, all. At midnight I arrived at camp, broken in spirit and used up. Regalado would have plied me with a thousand questions; but my brother, more thoughtful, made him hold his peace till morning. I slept very little; and that night I often heard old Regalado murmur prayers and bless himself.

Next morning the bright sunshine flooding the whole valley made me feel nearly as comfortable as ever. When I told my companions the whole experience, the only consolation I received was a "*no te dije, no te dije*"

(didn't I tell you, didn't I tell you) from Regalado, and grim silence from my sometimes taciturn brother.

After a good camp breakfast my brother and I returned to the scene of my adventure. It wore a somewhat different aspect now, with company and the rays of the mid-day sun lighting up the defile. Priding ourselves on being expert trailers we made a critical examination of every nook and corner for a quarter of a mile up and down the cañon. No unusual sign rewarded the search; no other trail but that of animals could be found.

My rifle was there all safe, but the *cimarron* skin was gone. We knew well enough who took that away; jaguar tracks too plainly betrayed the thief! The horns and *riata* were exactly where I had placed them.

My brother now proposed to search for the bullet-mark. No trace of it could be seen; but the bullet we found flattened and lying on the sand in the middle of the wash. My brother picked up the lead, and turning it thoughtfully in his hand he said, "Enough, *vamonos;*" and we turned our backs on the spot forever.

REDWOOD INDUSTRIES OF CALIFORNIA

BY GEORGE D. GRAY

CALIFORNIA is pre-eminently a land of contradictions. Let a number of Californians who have resided exclusively in separate sections of the State, meet and relate their experiences, then describe the peculiarities of the locality from which they have come, and the uneducated hearer will undoubtedly come to the very same conclusion as the Eastern listener who had given patient attention to the stories of two of his California friends, which he expressed thus: "Well! Your stories are very contradictory, but one thing must be true: California has certainly the biggest prevaricators in the world."

One will tell you of level plains which extend as far as the eye can reach—so they do in San Joaquin Valley. Another will speak of mountains and valleys, "where the miles stand on end"—you can find them in the Yosemite. One will boast of orange and lemon groves, and all kinds of tropical plants that grow in luxuriance all the year round—Los Angeles, San Bernardino and San Diego have them. Another relates of snowstorms and drifts thirty and forty feet deep, and perpetual glaciers —so there are in Sierra County and the Mount Lyle country. San Bernardino County has a great river flowing underground, with no sign of a river-bed, while in San Diego you can see a river that is "all bed"—no sign of water in its dry channel for many months in the year; but dig down a little and you find it in abundance, and come to the conclusion that the stream is wrong side up. Sacramento Valley gives one a cloudless sky for many months at a time, while San Francisco furnishes fog thick enough "to be shoveled off the sidewalks." The store-keeper's notice might apply well to our State: "If you don't see what you want, ask for it and I'll bring it."

Now, the Sequoia sempervirens, or, as it is usually called, "redwood," is a true Californian tree, and found nowhere else, and, like its native State, as many true and opposite descriptions and qualities can be given of the tree and wood as of our climate and the topography of the country. The butt will sink like a stone, while a log cut from the top of the tree will float like a cork. Other lumber will shrink in width—when dried in the open air, the shrinkage of redwood is very small. Lumber from this tree placed in the ground will last for years, while the lower or butt logs are considered the most durable. This quality of durability is admirably illustrated by the accompanying cut, which is taken from a photograph of the stump of a tree ten feet in diameter, whose roots have overgrown a log four feet in diameter. The material of the latter is as sound as the day some catastrophe laid it low. From some trees you can split out a board an inch thick, twelve inches wide and sixteen feet long, while in others it is so curved and mixed that it is almost impossible to split a log, or, if you succeed, the piece is so crooked that you must "tie it up to prevent its crawling away." Some is soft and admirably adapted for turning and carving, while that from other sections is hard, and for lasting qualities in the ground is unequaled by any other wood. Some lumber that is very heavy when cut will lose two-thirds of its weight in drying, while other trees will scarcely change in weight, if kept for years. Other woods, once dried, will swell when exposed to damp weather, while redwood, once

seasoned, is not affected, even though soaked in water. You can obtain samples of redwood of so light a shade as to remind you of Spanish cedar, or so dark as to resemble black walnut. You can have it with grain so straight that you think the lines in it must have been ruled by hand, or, if it suits your fancy better, you may select a piece which vies with French walnut, mahogany or rosewood in the beauties of its curves and varieties of its figures. All other varieties of the cedar family, when once cut down, are destroyed, while the redwood stump will throw out a hundred green shoots, and cover itself all over with verdure and beauty.

Having spoken of the remarkable qualities of this wood, it may also be interesting to the reader to enumerate some of the purposes to which it is peculiarly adapted.

The heavy wood placed in the under-pinning of a house or for fence-posts lasts for many years. For railroad ties, it is used to the exclusion of all other timber on the Pacific Coast, the ordinary life of a redwood tie being from ten to twelve years, while a pine will hardly last four, or an oak six years. A roof covered with redwood shingles will last until the nails rust off. For outside or inside house finish, the ease with which it is worked into brackets and mouldings, and the quality of never swelling or shrinking when once dried, causes it to stand without a rival, while its great variety of color and grain and its susceptibility of receiving a high finish, bring it into great favor with those who desire novel effects in interior decorations.

Containing no pitch or resin, it does not burn with the readiness or heat of

The Logging Train Coming Down

pine, and is more easily extinguished, an important quality which insurance companies have recognized in fixing the rates of insurance. There is in Humboldt County a "fireproof" warehouse built of heavy redwood plank, also a theater now building which is being protected from surrounding buildings in the same manner. For fermenting wine tanks it is far superior to pine or any other wood. The insect which frequently troubles wine-makers by boring through the tank staves never troubles redwood. In tanneries, the warm solution which so quickly destroys other vats, seems to have no effect on this timber. There are vats now in San Francisco which have been in use forty years. But to enumerate all the uses to which this unique wood is adapted, would require more space than the editor will allow, and might prove a trial to the patience of the reader. I will therefore leave this portion of my subject and turn to the home of the Sequoia sempervirens, and methods of preparing it for market.

Asleep in a Redwood

The whole body of this timber in the world, is confined to the region between the 37th and 42d parallels north latitude, or between Monterey Bay on the south and Crescent City on the north, an extent of country about 400 miles long. The width is irregular, following the conformation of the mountains, but will average about 20 miles.

The whole belt of redwood lies upon the western slope of the Coast Range. Throughout the section named the rains are heavy in winter, and the fogs dense in summer, coming in from the ocean regularly with the wind every afternoon, and the climate during the whole year is mild and even in temperature. The redwood has been called the "child of the fog," and where the ocean moisture ceases the redwood disappears.

I would not imply that the section named is one vast forest. These were the original boundaries of the redwood belt. In Santa Cruz County there is still considerable standing timber, but north of there until you reach the Russian River most of the country has been stripped. Between the mouth of Russian River and Crescent City on the north there are large tracts of fine farming land, extensive sheep and cattle ranges as well as large sections which have been denuded of their native timber. Dr.

Kellogg, in his "Forest Trees of California," says that "probably from a fair estimate of the timber (redwood) along our coast it would not comprise more than three thousand square miles of forest land."

The amount of timber now standing has been variously estimated, rating all the way from 25,000,000,000 to 100,000,000,000 feet board measure. While in some sections the land will not yield more than from ten to fifteen thousand feet per acre, there are others which will yield 250,000 or even 500,000 feet, so it will be seen how difficult it is to figure the total closely. In some sections it requires a whole tree to make a telegraph pole (12x12 at butt by 30 feet long,) while in others a single tree has been cut which scaled in saw-logs 66,500 feet. There are trees standing though that will make over 100,000 feet each. While there are occasional large trees in Santa Cruz County as a rule they are small, and the average size increases as one goes north, the largest growth being found at the northern end of the belt in Humboldt County. The quality of the wood also improves in the same direction. In Santa Cruz County most of the timber is hard and flinty, a characteristic most desirable for its lasting qualities, when wanted for foundations of buildings and bridges, fence-posts, telegraph-poles, etc., but not as desirable for house finish and the finer purposes for which redwood is so much used, as is the product of Mendocino and Humboldt counties. In the forests of the latter counties it is not at all uncommon for the lumber sawn by the mill to average sixty to seventy per cent sound and clear, without knots or shakes, light and soft and

Hauling to the Mills

of the finest texture, nor is it difficult to obtain planks of strictly clear lumber, six inches thick, five or six feet wide and twelve to twenty feet long. A plank, which was recently hewn out in Humboldt County for the Columbian Exhibition at Chicago, measures five inches thick, sixteen feet five inches wide, and twelve feet nine inches long, and contains 1,046 feet of lumber. I speak of these large trees, but would not give the impression that this is the prevailing size. While such productions are not rare, the average diameter of saw-logs is from four to eight feet, and most of the mills on the coast are built with reference to handling timber of this size. Throughout the redwood belt, there is but little other timber—some pine, fir and spruce is cut, but no great amount of either.

Of course, the general modes in use in different lumbering sections are the same the world over, but in handling the large redwood logs, the nature of the wood and size of the timber call for certain appliances specially adapted thereto.

When the trees extending over quite a section have been fallen, the bark, which is very thick, is stripped off, and a fire is run over the ground to burn the rubbish and undergrowth of brush. Such a proceeding would be quite disastrous in a pine country; but since redwood contains no pitch or resin, and the green timber contains so much sap, the good logs which are lying on the ground are rarely affected by the fire. The ground having been cleared, then begins the real labor of getting out the timber. For handling these monsters, no ordinary road will answer. It must be wide and smooth

A Giant Redwood Growing over a Fallen Log

In the Redwood Forest

as a turnpike, all rocks and roots must be carefully removed, all hollows and gullies filled up. If the ground is level or soft, skids must be laid down to reduce the friction and prevent the logs digging into the ground as they are being hauled along, for no wheeled vehicle of any kind is used in transporting the logs in the woods; they are simply "snaked" along over the ground. With the road built, then follows the task of rolling the logs into it. For this purpose, a portable steam engine is now generally used. The machine is known as "Dolbeer's Steam Logging Machine." It consists of an upright boiler and engine, somewhat similar to a portable hoisting engine, except that instead of a reel to wind the rope on, it has a "gypsy head," similar to a capstan on board a ship. It is placed on a strong frame, the sides of which are like sled runners. To move the machine around in the woods, a line is run ahead and made fast to a tree or stump, then two or three turns are taken round the "gypsy," the engine is started up, and the "gypsy" winding in the rope, the machine hauls itself in any direction wanted. When in place, it is made fast to a tree or stump, and a line run to the log that is to be removed, and by means of snatch-blocks, it is hauled in any direction desired. As the machine has about twenty-five horse-power, the work can be done much cheaper and quicker than by oxen or horses. Once in the road, the cattle are needed. Several logs are fastened together to make a "train," and hauled to the railroad to be loaded on the cars, or to the stream to be floated to the mill. To handle a team of eight or ten yoke of oxen in front of a train of logs requires a teamster of more than ordinary ability. The best teamsters command a salary of $150 to $180 per month. The "train" once started, there must be no stopping if it can be avoided. It is a great sight to look at one of these "trains" started up and moving. Here are ten yoke of great oxen, and behind them the "train" of ten to fifteen great logs, of all sizes from four to ten feet in diameter, fastened with strong "dogs" and chains, one behind the other. All is ready. At first, the driver walks up and down the length of his team, speaking softly to this or that one by name, and gently spurring up the lazy ones with his stick, until he sees that every animal is bearing equally on the yoke. Now for it! He shouts and yells, curses and swears, calls every animal by name, and consigns every individual one—hoof, horns and hide—to all the torments mentioned in Dante's "Inferno"—shouts again, and wishes he was skilled in six languages, that he might give more variety to his vituperations, while amid the din and uproar every beast strains himself to the utmost. See, it moves!

Alongside, up and down the long line of logs hastens the "water packer," filling his pail from barrels of water standing on the roadside, dashing some of it under this or that log to reduce the friction. Over this level ground, once started, it runs smoothly, but now they come to a steep pitch in the road, the logs begin to slide, and faster and faster as each new log comes to the top of the incline and begins its descent; but the driver is on the alert, and at a signal from him the whole team breaks into a wild run. It is a grand sight, twenty great oxen tearing down hill, while just behind them come ten to fifteen great logs thundering after. It is a run for life or death. Should the leaders lag it means death to those behind; should an animal stumble and fall, it may be the cause of killing half the team. Away they go and for a few moments it seems a question whether team or train will reach the level ground first; but the road is well built and the driver has his team well in hand, and now at the bottom of the steep pitch, they gradually "slow up," they lean against their yokes, and so they go,

Redwood Gulch

until the logs are safely landed at the railroad or the river. The loads hauled are sometimes enormous. A train of seven logs hauled in Humboldt County in 1878 by A. A. Marks, teamster, scaled collectively 22,500 feet board measure of merchantable lumber.

The redwood mills are generally up to the times, and are quite ready to adopt all the latest improvements in saws, edgers, trimmers and planers. Until during the last few years, double circular saws were generally used to reduce the logs to lumber, but lately the band saw is rapidly supplanting the circulars. The circular saws are usually about sixty to sixty-four inches in diameter, and are hung one above the other; one cutting from the bottom of the log and the other from the top, the saw kerfs meeting in the center of the log, thus enabling the mill to cut plank four and one-half to five feet in width. But for logs of larger diameter there is used what is called the "Evan's Third Saw." This is a saw hung on a horizontal shaft above the other saws and cuts down from the top of the log to a little below the arbor or shaft of the middle saw. While of course its kerf is kept parallel to the lower saws, its cut is made four inches further out into the log. Besides this saw there is a fourth saw, which is hung on a perpendicular arbor, and makes a horizontal cut into the log just at the bottom of the cut made by the third saw. The effect of running these two saws is to rabbet out a piece extending from the top of the log to a little below the collar or the middle saw. Mills thus arranged can, by "turning down," saw logs eight feet in diameter, but logs of larger size must be split.

As previously stated, the redwood belt is located on the coast of the Pacific Ocean, and between it and the interior of the State of California lies the Coast Range; for this reason the railroad touches it at only one or two points and almost the entire product is transported by water. Both steam and sailing vessels are used for this purpose, and the capital employed in the lumber carrying trade is a very important factor in the commercial interests of our State.

There are about 40 mills engaged in cutting redwood, the largest having a capacity of 75,000 to 80,000 per day. Perhaps the average capacity of them all would be about 50,000 feet per day.

There was manufactured and shipped from the redwood mills in Mendocino and Humboldt counties during the year 1891, about 230,000,000 feet. Of this about 12,000,000 went to foreign countries, while the balance, 218,000,000, were consumed in the States on the Pacific, or shipped to interior States.

It seems eminently proper that mention should be made of some of the more prominent firms and corporations whose energy and capital have been enlisted to create and foster this great industry. Among such the writer would name the following: The Excelsior Redwood Company, C. A. Hooper & Co., San Francisco agents whose mills are situated at Eureka, Humboldt County, having an output of 24,000,000 feet during the past year, a considerable quantity of which is shipped to Eastern and foreign ports; the Fort Bragg Redwood Co., whose mills are at Fort Bragg, Mendocino County, and having yards under the name of the Union Lumber Co. in San Francisco. Their mills have a capacity of 20,000,000 feet per year, and they deal largely in ties and piles.

The Pacific Lumber Co., Allan A. Curtis, President, have their mills at Scotia, Humboldt County, with a capacity for cutting 20,000,000 feet of lumber and 50,000,000 shingles annually, a part of which is shipped foreign.

The Dolbeer & Carson Mill is located at Eureka, Humboldt County, and can cut 18,000,000 feet of lumber and 25,000,000 shingles yearly.

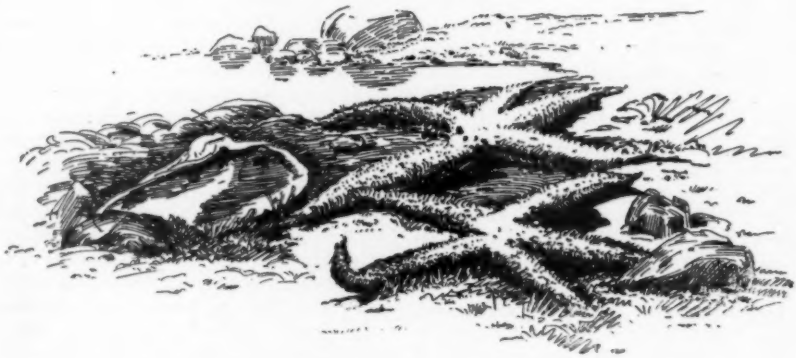
The Milford Land and Lumber Co., G. D. Gray, agent, San Francisco, whose mills lie on Humboldt Bay, Humboldt County, have an output of 8,000,000 feet per year.

The Humboldt Mill & Lumber Co., F. Korbel, President, have their mills on Mad River, Humboldt County, with a capacity for cutting about 16,000,000 feet annually; they also have connected with the mill one of the most complete outfits on the Pacific Coast for manufacturing redwood tanks.

The Albion Lumber Co.'s, W. J. Reed, President, mills are built at Albion, Mendocino County, and will shortly have a plant capable of cutting 15,000 feet per year.

C. L. Dingley & Co., of San Francisco, own a quarter interest in the Gilalala Mill Co., and are also agents for the De Haven Lumber Co. besides having lumber yards in San Francisco.

In addition to these, there are a number of other concerns having mills in Humboldt and Mendocino counties of almost as much importance.



ALONE

CHARLES KIELY SHETTERLY

Alone we tread life's devious pathways, sent
  We know not whence, across our toilsome way,
  Folded around in mists, uncertain, gray,
Shadows of hope and fear together blent.
Anon, the dull, thick clouds apart are rent,
  Love wakens, and makes glad the passing hours;
  The way leads onward o'er upspringing flowers,
And past brooks, murm'ring of a sweet content.
Yet, as we clasp and think this joy our own,
  It fades—again in solitude we stand,
  Watching the light wane o'er a darkening land;
The winds sob round us with a wailing moan,
  When, all unlooked for, with a grim, firm hand,
Death opes the gate, and we pass out—alone.

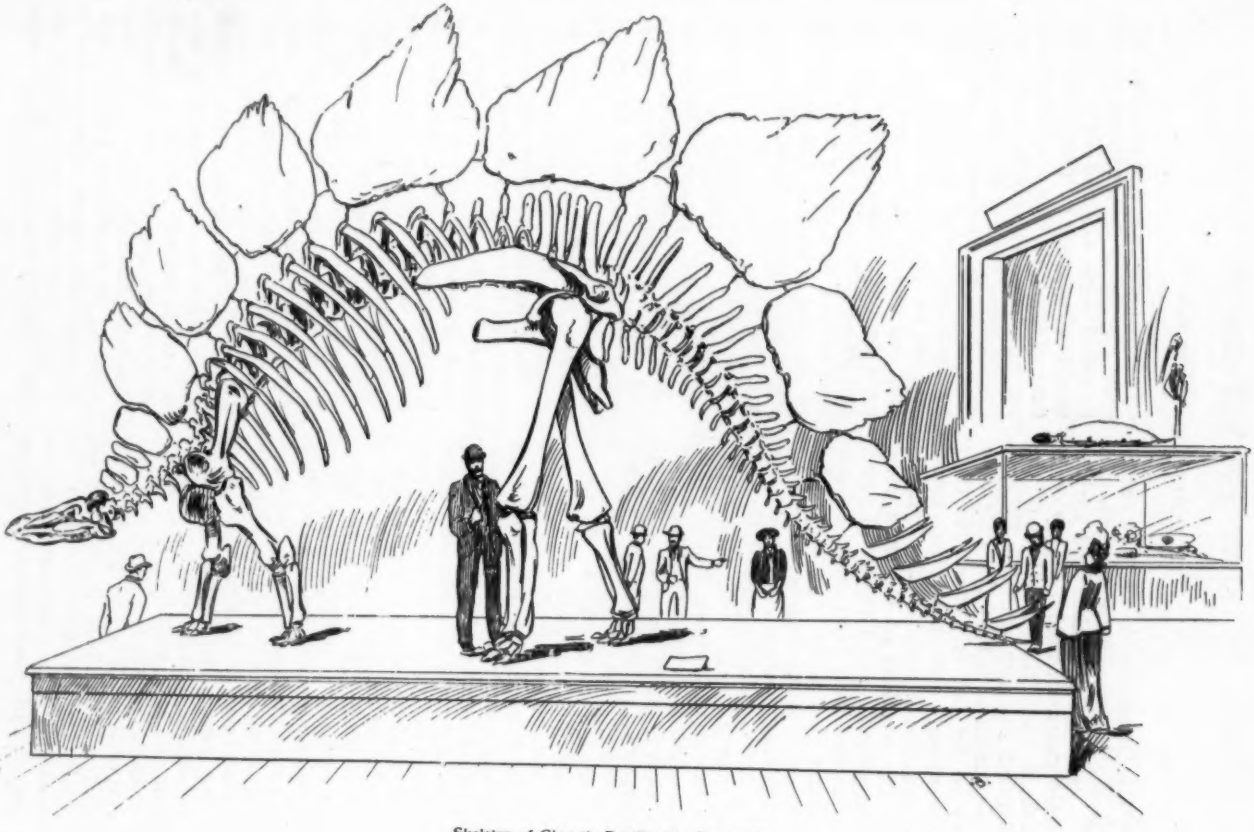
SOME EXTINCT GIANTS

BY JAMES ERWIN CULVER

THE romancers of the past centuries, Pontoppidan and others, who created the Kraken and various fabled monsters, would, if they could look in upon the collections of the National Museum and Yale College, have reason to believe that they were not so far out of the way in their conceptions, and that the actual productions of nature really outrival all the creations of the most vivid imagination. For a number of years, collections have been made of the gigantic forms that once peopled Western North America — huge lizard-like creatures, veritable sea serpents mounted on legs or flippers, and now they are being mounted at the National Museum, to the astonishment and wonder of the unscientific public. Some of these monsters are found intact so far as the skeletons are concerned. Others are known only by their tracks—huge footprints literally upon the sands of time.

In the Connecticut Valley, some of the most interesting footprints have been discovered, the quarrymen opening up slabs upon which are the imprints of gigantic bird-like feet, formed millions of years ago. These slabs, some of which are ten or twenty feet in length, are the leaves of the book of nature, which can be read by the geologist with ease. Imagine a pond of today with muddy shores. As we sit in the rushes, we see the water birds running along the beach, leaving the delicate imprints of their feet. Here a frog leaps along, then glistening in the sun is a snail forming a trail; again an insect, with its erratic track; a passing rainstorm, leaves the imprint of its pathway in the soft mud. Even the wind tells its story by the little ridges or furrows which the waves pile up. Suppose that the water in this pond should be drained off in some way, and day after day the shore containing these telltales should be baked in the summer sun. What would be the result? The mud would turn to stone, making the footprints, the raindrops, the ripple marks, enduring monuments of this day's work. This is what occurred in Kansas, Montana and other Western States millions of years ago. A large inland sea existed there, extending in early days from the Gulf of Mexico, and losing itself to the northwest. In later times it was, owing to the rising of the land, a shallow inland sea, in which lived the giants which constitute the subject of this article. They were monsters in all the term implies. Aquatic giants that swam in the heated waters, dragged themselves along over the muddy beaches, leaving their footprints in the sands, while their huge skeletons are buried in the stony mud of the ancient sea beaches, to be uncovered by the scientists of the nineteenth century.

The appearance of these early inhabitants and their size is almost beyond comprehension. It was a time of weird shapes—dragons, with all but the fiery breath; sea serpents one hundred feet in length; whale-like monsters that crawled along in shallow waters; uncouth reptiles with gigantic bodies and small heads, helpless and harmless; others with enormous jaws lined with sharp fangs; birds with teeth and no wings; flying monsters with leathery wings twenty-two feet across; others with slender tails, the end broadened into a paddle-shaped stucture; lizards thirty, forty or more feet in length crawling through the mud, now standing on their hind legs, or anon bathing in the warm waters in search of prey. Such were some of the giants that formerly lived in North America

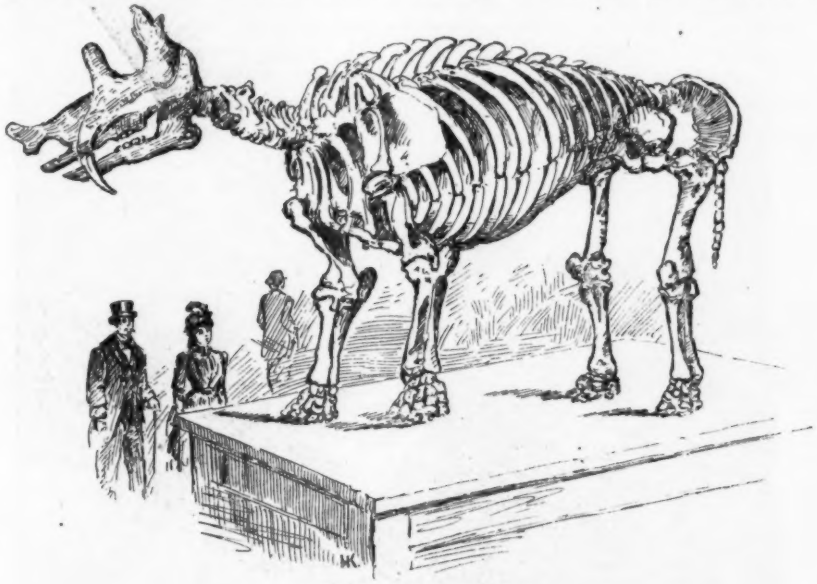


Skeleton of Gigantic Reptile with Bony Frill

in the old days, and made up what is called its fauna.

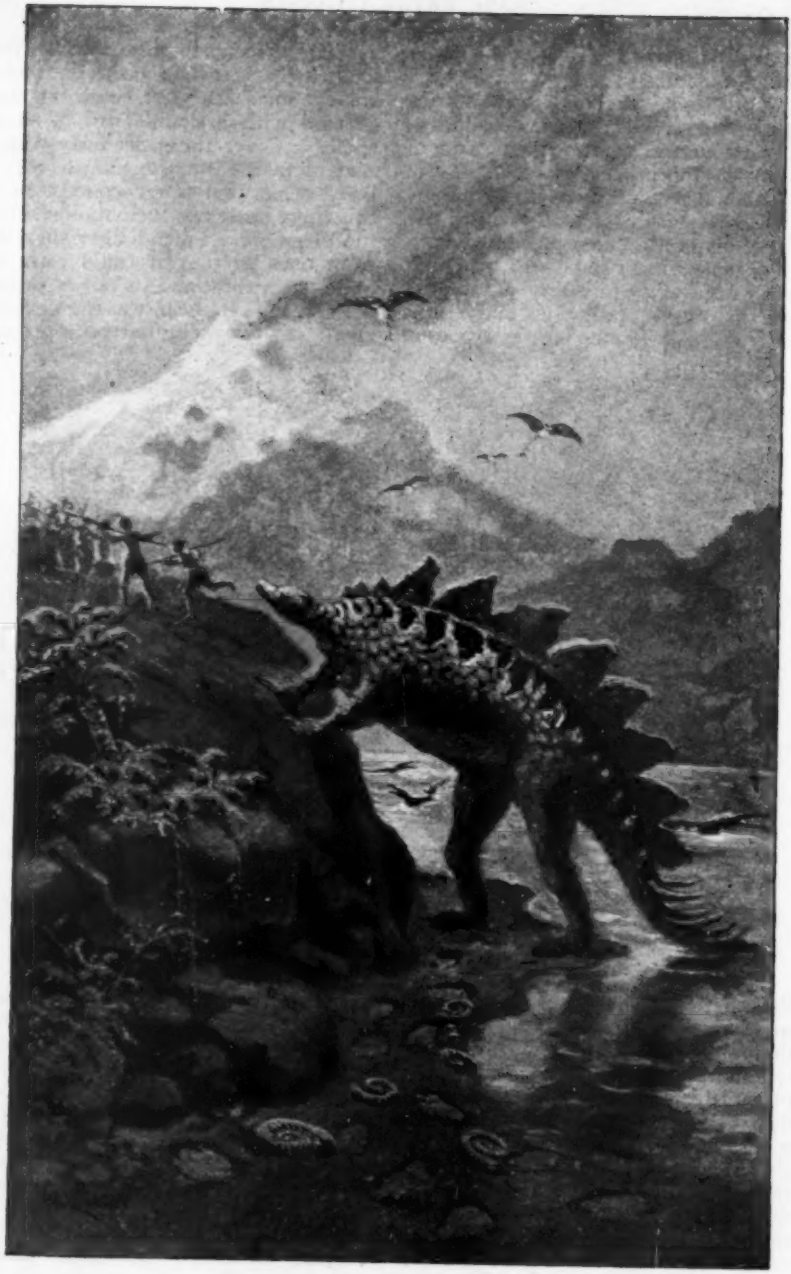
While to-day we laugh at the stories of the sea serpent as an impossibility, this creature in gigantic shape and of frightful appearance was one of the common forms of this time, and in some of the Western States, as Kansas, the skeletons of the monsters have been seen, ten within a small area, reaching away from sixty to nearly a hundred feet in length, telling a marvellous story of their former size and power.

Imagine a kangaroo, thirty feet long, its back studded with enormous spines, some *four feet across*, its tail covered with a double row of sharp spines. Cover the entire body with a coat of mail, arm the mouth with a bony beak, and some conception of this huge beast may be obtained. Its hind legs were much longer than the front ones so that it could raise up and rest on these and its tail as pillars of support. Its head was wonderfully small, the most diminutive in proportion to the size of the body known, while, wonder of wonders, it had what scientific men consider a second brain in its pelvis, an expansion of the spinal cord, forming an object or second brain, nearly ten times as large as the brain proper. When the *Hypsirhophus* was attacked, few creatures could make so vigorous a defense. A single blow of the long tail would drive the double row of bony bayonets through the enemy, while the enormous spines added not a little in repelling an attack. The bones of this giant were



Skeleton of Agathaumas

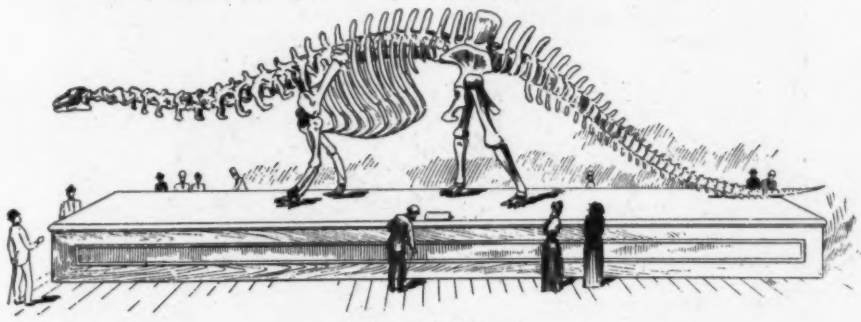
Whether man existed at this early day, we know not. There is no evidence that he did, a Tertiary man being hardly admitted, and in the accompanying pictures, the human figures are introduced more to show the size of the giants that were then in all probability masters of the situation. One of the most astonishing is shown in the accompanying illustrations, clothed in the flesh, as it may have appeared, while the outline shows the skeleton now in the Smithsonian. So weird a creature would hardly be conceived.



Restoration of Hypsirhophus

found imbedded in the rocks of Colorado, where it died millions of years ago, and became buried in the mud of the ancient lake.

Equally remarkable is the *Plesiosaurus* and the *Ichthyosaurus*, the former a veritable sea serpent, thirty or forty feet long, with four paddles, a long, snake-like neck and head; while the latter has a huge whale-like body, with a head resembling that of an alligator. The sight presented by these monsters swimming about in a shallow lake, must have been a remarkable one. Here and there the long necks could be seen rising above the surface, working like snakes, twisting this way and that, now disappearing beneath the waves, followed perhaps by forms more wonderful still.



Skeleton of Amphicoelias

Another of these animals shown in the present article, which has recently been placed in the National Museum, is the *Agathaumas*. Note its gigantic head and its comparatively small body. What animal of to-day possesses so strange a proportion? It resembles to some extent a rhinoceros, but in life bore little resemblance to this creature. The animal was twenty-five or thirty feet in length, its head being armed with three horns—two, each three feet in length, extending from the forehead, while another, sharp and dangerous, was perched upon the nose, which was further protected by a hard cutting beak. Scientists are able to form some definite idea of the appearance of an animal from its bones, and noting the extraordinary frill of bone which extends backward six feet from the head of the *Agathaumas*, we can realize the enormous mass of muscles which must have been required to hold up the giant's head, and which made its neck of great dimensions. The *Agathaumas* was higher than Jumbo and longer than two Jumbos, placed in a row, and besides the horns as a defense, it was covered with a protective armor which rendered it safe from the other predatory animals of the time, as it must be remembered that in this early day, every animal had its enemy—one preyed upon another.

If men lived in those days, they were cave dwellers living in the rocks, garbed in skins, defending themselves, if necessary, with stone clubs and hammers. But what could their weapons avail against the giant *Amphicoelias* that crawled slowly and heavily out of the water in the direction of their homes, a mountain of flesh, weighing possibly twenty tons. four or five feet taller than the tallest elephant, and dragging along sixty or seventy feet of flesh? What could such an animal be? A long neck, a snake in itself, a tail like that of a crocodile, with a huge body, the hind limbs longer than the fore ones, suggesting that possibly the giant could rear himself aloft. As it marched slowly along, it dragged its

Restoration of Amphicœlias

huge tail, and its weighty feet sank deep into the beach, making footprints in the sand, which the reader may examine in the National Museum, footprints, each of which covers a square yard of surface. The writer has stood by the thigh bone of this giant as it rested on a shelf, and the bone was the longest, and four men were required to place it in position. The appearance of this strange nondescript reptile was marvellous indeed. A slow-moving, stupid creature, with head and mouth so small that it was to all intents and purposes, helpless, relying upon its gigantic shape to terrify its enemies.

A cousin to the *Amphicoelias* was the *Atlantosaurus*, a giant that undoubtedly attained the length of the largest whale of to-day, over one hundred feet, a sea serpent with enormous limbs, the thigh bone being seven feet in length, its legs being pedestals for support rather than for locomotion, and in the water anchoring it to the bottom. This monster is the largest land animal yet discovered.

This time was the day of the sea serpent in all the term implies, gigantic crawling lizards mosasaurs, fifty, sixty, eighty feet long, abounding everywhere, playing havoc with the smaller forms. There was the buoyant *Camarasaurus*, seventy-five feet long, a snake in appearance, with long legs, floating or wading along, buoyed up by the curious air cells in its back bone. Among the remarkable animals of the time was a leaping lizard, the *Laelaps* that stood twenty-five feet high and could cover nearly one hundred feet at a bound. To render it light, its bones were hollow; sharp teeth and claws made it a formidable beast. Even the massive *Hypsirhophus* had an enemy in the agile *Creosauratrox*—that was provided with a sharp claw on its hind feet with which it could rip and tear the small-headed monster. Fish lizards, sea serpents, monsters in shape and form, made up the strange inhabitants of these days, when America was rising from the waters. Kansas and other States were covered by an inland sea, on the shores of which roamed land animals as weird and wonderful as the strange lizards and sea serpents which populated the waters.

SHOULD TEACHERS BE PENSIONED?

BY MRS. E. S. LOUD

WHEN the subject of pensioning teachers is first brought forward the momentary impulse in the minds of many seems to be one of opposition. But when we examine the educational systems of other civilized nations, we find that in most countries where public instruction is treated as a State service, the policy of giving pensions to superannuated teachers, is recognized and followed.

In Prussia, the largest of the German States, were laid the foundations of a public school system, which improved upon and consistently worked out has served in many respects as a model for other nations.

From the outset, the German States have taken it for granted that in order to make their school system efficient and productive of the best results, they must make teaching a career sufficiently attractive to induce persons of ability and culture to take it up as a life work. Hence we find that the teacher's profession in Germany is considered as honorable as that of the clergy, law or medicine, is of life tenure and not only does he receive a pension when superannuated, but his pension, or a part of it at least, may at his death be continued to his wife and children. He is also provided with a residence, and generally fuel and light free. If it be urged that salaries are lower than in America, so also are the rates of compensation paid for all kinds of labor. But the cost of living is much less, and in proportion, it has been demonstrated that German teachers receive relatively as much salary as the average paid to American teachers, while those in large cities or occupying high position often receive more. We do not find the German school teacher emigrating to the United States to better his condition, although many other classes of Germans come here in great numbers.

In Holland, Belgium, Denmark, Austria, the Argentine Republic, Greece, Brazil, Hungary, Italy, Portugal, Sweden, Norway, Australia, Finland and Ontario, the educational system provides for pensions. Many of the cantons of Switzerland give pensions to their teachers. In Spain, the teacher is pensioned at sixty years of age, and the right to a pension extends to his widow and children.

In June 1853, the civil pension law of France was extended to include teachers and still remains in force. In Bavaria, the annual pension amounts to 70 per cent of the annual salary after ten years of service, 80 per cent after twenty-five years of service, 90 per cent after forty years of service, and the full salary after fifty years of service. In Hessen, 50 per cent of the salary after ten years of service, 72½ per cent after twenty-five years, 90 per cent after forty years of service. In Saxony, 33⅓ per cent after ten years of service, 41½ per cent after twenty-five years, 70 per cent after forty years of service.

Great Britain alone, whose public school system is of recent origin, has as yet no settled pension law although a specified sum is voted annually for pensions, donations or special gratuities to teachers. The government however has shown itself favorable to the measure and a bill now before Parliament is strongly supported by the press and other able advocates.

America's proudest boast is her public school system. To carry out that system the State establishes free schools in every community and thus virtually monopolizes the educational field. Where free education is offered by the State, the greater number of

parents, both from choice and necessity, accept its provisions, and the majority of those who wish to teach must do so in the public schools of the State.

All other branches of business are open to competition and the ambitious man or woman who possesses ability and enterprise may hope to win wealth or fame. Public school teaching alone is removed from this competitive field and this is one consideration that places the teacher who has given the best part of his life to the work of public education in a different attitude towards the government from members of other professions and callings.

The salaries of those who fill the highest positions in the department are not large when compared with the best salaries of similar positions in business houses, and the openings are too few in number for the great majority of teachers ever to hope to attain to them.

There are many demands upon a teacher's salary outside of the cost of living, if he would keep himself in the van of educational progress and increase his efficiency. But, by satisfying these demands, he finds that his salary will allow him to save but little towards the care of his old age. This becomes a serious consideration as years roll by; and while he is yet in his prime, where the wisdom he has gained from his studies and the experience he has acquired in imparting that knowledge would make him most valuable as a teacher, uneasiness and uncertainty regarding his future becomes a disturbing element in his work. It has been well said that "nothing depresses personal enthusiasm so much as to be constantly harassed as to one's financial concerns." When the State requires and accepts from a teacher his best mental and physical energies during the active years of his life, it should imply care for him when superannuated, and thus relieve him from his anxiety for his future.

But the granting of a pension will not alone render the teacher's life one of more security and freedom from care for the future, and thus enable him to devote all his energies to his work. This public recognition of the obligations of the State to its superannuated teachers will dignify the vocation and raise the standard of teaching. We all know of men and women that have made their mark in the world, who were once teachers. But there are too many other fields of emolument and honor, which promise better rewards to attract the person of culture and ambition, and thus they were lost to the profession which they might have preferred, and which their talents would have dignified and elevated. Even with a pension granted, the teacher's position would not lead to luxury or wealth. But it would be a career of assured independence, dignity and support that could command and would attract the best intellectual talent. In a Republic like ours, where public education is acknowledged to be one of the most important functions of the Government, every measure that will tend to add to its dignity and efficiency should be adopted.

Our National Government grants pensions to its judges, military and naval officers, private and non-commissioned officers after a term of service, or for disabilities specified in the "Revised Statutes," some on full pay, others on three-fourths or less. Under an Act of the Legislature of California, passed March 4th, 1889, the City of San Francisco grants a pension of half-pay to every policeman who, after twenty years or more of active service, shall have attained the age of sixty years, or who is disabled in the service. Thus, the principle of granting pensions lies in the idea that the person who gives all his active years to the service of the Government should be cared for during the period of his superannuation.

Whether teachers who have passed all the active years of their lives in the educational service of the State should be pensioned is a question that will be

solved in accordance with analogies in other departments of our political organization and with the usages of other nations.

Such analogies and usages justify the teacher's demand for a pension, and lead to the belief that the time is not far distant when Government will recognize the claim. The question is being agitated in several of the States, and noted educators urge its necessity as an aid to the permanency and dignity of the profession.

The pensioners in this State would probably never be numerous. In San Francisco, there are but seven teachers who have remained in the department for thirty years, and while records cannot be found giving the number who have taught in the public schools of the other counties of the State for that length of time, there are probably not a score altogether in California.

Granting pensions will not interfere with the removal of incompetent teachers, neither will it keep in the profession those who have no enthusiasm for the work. Thus, while a pension will be an inducement to persons of intellectual tastes to take up education as a career, it will be no temptation to those who use teaching merely as a stepping-stone to something else.

In no branch of the public service is there such a constant and exhaustive strain upon the attention and temper as in the schools. Thoughtless and ofttimes unkindly criticism is bestowed upon the teacher and his vocation, and yet into his hands is given the most trying and the most useful work of the Nation—the making of intelligent citizens and good patriots from whatever material is committed to his charge. Is not a profession that accomplishes such results worthy of taking rank with the highest? And does not the teacher deserve a pension when superannuated, as much as judge, soldier or policeman?

IDOL AFFECTIONS

BY ROSE MAYNARD DAVID

What count these earthy baubles, — things of state —
When one loved best of all that's loved on earth
Has left us to a present desolate
Where courted pleasure's place to pain gives birth.

I peer into the dark'ning silent night;
Some eager thought in mute unspoken word
I might perchance draw from your soul to mine
To quell the battling of a hope deferred.

But chilling, strange, stands silence there impaled
No way past common ways to bear me out
By that grim sentinel so deeply veiled —
I sink into a dreamless sea of doubt.

I know — as one who listens after death —
Our distant paths were led apart that we
Who hung for life upon each others breath
Might greater faith through long endurance see.

Questions of the Day.

ANALYTIC FICTIONS

IT is a matter of no little surprise to one who is much among authors, to see how few of them have any analytic conception of their own writings, and to see how few of them work upon the fundamental laws of philosophy. The human brain is so constituted that it can easily be trained to receive upon the film of its mentality, perfect photographs of the ever-shifting panorama of human life, and it has an unlimited capacity for storing away these negatives for future use. It is this half mechanical trick of the brain that overstocks the ranks of literature with so many writers of ephemeral and worthless fiction. Masters of the pen are as rare as masters of the brush, because so few writers possess the analytical power. One might as well expect to create a world-renowned surgeon from a man who knew nothing of anatomy, and who had never dissected a whole body, or any part of a body; he could neither restore nor adjust distorted muscles. Neither can a writer create character until he has practiced in the mental dissecting room long and patiently, and has learned the laws which govern human action.

Sometimes an author writes a story of such fidelity of trait and incident, that the experienced philosopher draws from it a deep significance. James Sully says in one of his essays: "We are often vaguely aware of impressions and elements of experience, yet do not fully recognize their existence till some one endowed with keener vision and the namer's skill, seizes the shifting, shadowy form and fixes it for all time in a definite shape."

Fortunate indeed is the young writer who has a wise, friendly critic, who will take each of his productions, and with the keener vision, construct from the dry bones of carefully wired together incidents, a living form, or, in other words, who will catch the vague, floating impressions of the tyro and fix them indelibly upon the sensitive plate of a permanent negative. Every delineation of a human character is the picture of a human soul; and until the young writer becomes conscious of that fact, his work will be feeble and unsatisfactory. The majority of young authors string their incidents together as the children in the kindergartens make chains of bits of colored straw, blissful in the ignorance of the fact that they might be making a golden chain of perfect links, a chain that cannot be broken, that will never tarnish, and that will endure longer than any human life.

An author tells the story of a villain. He takes him through all the supposed vicissitudes of a criminal's career. Most of the incidents are, unconsciously, no doubt, drawn from the records of crime that one drinks in as regularly as he does his morning coffee. Perhaps in the end the villain wearies of vice and either repents, restores his ill-gotten gains, is murdered, commits suicide, becomes a minister of the gospel, or else a radical reformer. So far, so good. But no man ever entered upon a criminal career all at once; no life is a succession of exciting crises unleavened by qualms of conscience; the fall from virtue to villainy is usually gradual, and the bottom of the pit reached only after many a bitter conflict between the sense of right and the temptation to sin. Nor is there always a fall. It often happens that a saintly soul growth springs from the blackest mud of crime, of inherited tendencies to evil, of dissolute environments and influences.

How much more powerful, then, a simple narration might be made, if, through the actions, not the moral reflections, of the

principal character, it drew with a master hand the picture of these terrible battles with conscience, which all of us have experienced in a greater or less degree, and for which we have a keen appreciation, prompted by the throb of a responsive chord in our own breasts.

Writers sometimes attain this soul analysis unconsciously, but how much more powerful their work would be if they employed their characters to illustrate the great laws that govern human souls, instead of shaking a few random characters in a box, like marbles in the Pigs in Clover game, depending upon chance combinations to produce a satisfactory *denouement*.

An author who does not fathom the subtleties of the characters in his own books is in the same position as a man who plagiarizes the work of a greater minded man than himself. Anstey illustrates a case of this kind in his novel "The Giant's Robe."

Have you known a liar in your experience? Did he live a despicable, jelly-fish life of evasions, deceit and shame, humiliating his honest wife, ruining the expanding minds of his children by his vile example, alienating friends and sowing seeds of distrust and hatred everywhere?

You have seen the results of such a life; you have seen the chain of incidents of which this history was made. But if you purpose making this man the leading character in your story, the knowledge that comes from seeing alone will not suffice. You must search for the causes that led to this moral decay; you must learn whether inheritance contributed to his weakness; if the sternness of his parents kindled the first fire of deceit in his bosom; if the shadow of a crime committed in a moment of madness makes evasion a necessity. Is he conscious of his sin? Do the timid reproaches of his wife madden or sadden him? Does he ever try to curb his tongue? Does humiliation ever overtake him? Is he prompted by malice or does he idly draw upon a morbid imagination? Has he any moral sense?

In fact there are a thousand questions that must be answered before one can paint the character of the liar with really telling strokes.

The tenderer and finer soul developments of sensitive, highly organized beings require still closer study. Many can comprehend the growth of the evil tendencies of the criminal better than they can the heavenward flights of the saint. Material wrong in the form of specific acts is apparent to the majority of minds, but few indeed are those who even dream of the existence of the fine frenzies, the exquisite tortures of conscience, the delicious enjoyments, the simple sorrows, or the deep floods of passion that form such a great part of the sensitive organization.

George Eliot is the best exponent in the English language of soul development; and one can learn a world of truth from Adam Bede, Dinah, Maggie Tulliver and some of her other characters.

THE SUPPRESSION OF VICE

THERE are some reforms being quietly carried on, which rarely are heard of. An instance in question is the Society for the Suppression of Vice, of San Francisco, an organization which works quietly, yet produces great results. In New York, Anthony Comstock's work is well known; in fact, he has now a national reputation by his bold attacks upon the horde that prey upon the morality of the Nation. It is a good sign of the times that business men in San Francisco can and will interest themselves in this subject of such vital importance. The leading spirit and treasurer of the San Francisco Society is Richard H. McDonald, Jr., who is an active worker, and who has been an important factor in ridding the city of a vast quantity of obscene and immoral literature that great cities are flooded with. Mr. McDonald's example is one that should be followed by business men in general. The majority of men who make up the commercial world claim that they do not have the time, yet every man owes a portion of his time to the cause of morality.

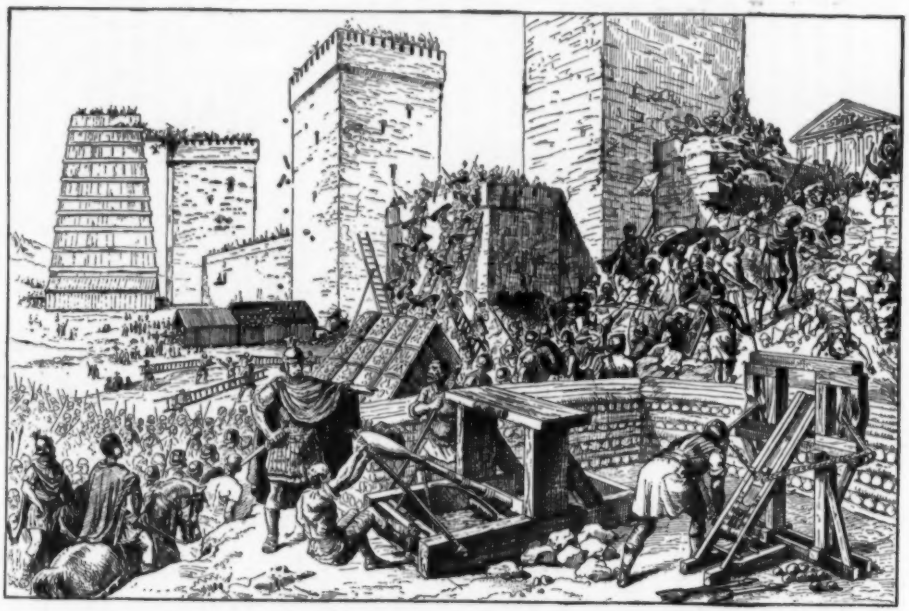
NEW BOOKS

STORY OF DAVID GRIEVE.—Every once in a while some thoughtful literary critic gives voice to the wish that the novelist might appear who could give a clear picture of human soul development. Most writers of fiction are content to sketch, with bold strokes, the great crisis of the lives of their central characters; and if they do try to dissect and analyze the formative processes, they are dubbed "tiresome" by the public, who demand what are now known as etchings and pastels in prose—the most concentrated forms in fiction. In the diary of Marie Bashkirtseff, the superficial world thought that it at last grasped the fixed photograph of a human soul. The thoughtful read it, tried to say Eureka, then sighed and labored onward in quest of a nearer approach to truthful delineation. This Bashkirtseff diary was the story of an emotional, ambitious, abnormal, unevenly developed nature, and one, that had it matured, might as readily have become an exaggerated form of insanity as a bright luminary of genius. Mrs. Humphrey Ward, in her new novel, "The History of David Grieve," rises above the dead level of any school of fiction, and, with the touch of a masterful genius, lays before us the unadorned, unobscured process of the evolution of one human soul from its cradle to its grave. She does not tell an alluring story; she neither undervalues nor overrates the common happenings in the existence of the man in the ordinary walks of life; she points no morals; she simply allows a human life to drift before our eyes in panoramic sequence, trusting to the fidelity of the picture to tell its own tale of maturing processes. The character of David Grieve is based on the merest germ of inherited sturdiness. It would have been quite possible for him to have been a heavy villain had he fallen among thieves, so to speak, early in his career. His early training and his youthful environments were revolting to him, and no tender home influences, delicate associations or religious or moral etchics gave him any foundation to build upon. What he learned was the result of experience; and his lessons bore fruit, as most of our bitter lessons do, unconsciously. David Grieve is not especially attractive, nor is any other character in the book particularly interesting. They are all human, all more or less commonplace, all defective, and none of them would ever make any special demand on our sympathies. They typify the great rank and file, and in that lies the wonderful power of the book. Long after the last page has been read, and the book has been laid away on the dusty shelf, the incidents of the story and the pictures of it will recur to the memory, to substantiate the very incidents we each of us find day by day, so close at hand. We all know our Reubens and Hannahs, our Purcells, our Dora Lonnaxes, our Louies, our Elises and the rest of them.

We can never forget the picture of Madamoiselle Delannay's first appearance at the top of the staircase, in the third-rate pension, nor that scene in her studio, where David Grieve and his sister catch their first bewildering glimpse of *la vie parisienne*.

For many of us, the Westmoreland country will be a living landscape, with its wild moors, desolate rock patches, wandering herds of sheep, winds, rains and uneven elevations. To others, again, the most vivid impression will be the glimpse of the few perfect weeks at Fontainebleau, where all that is most bewitching of French suburban life is portrayed.

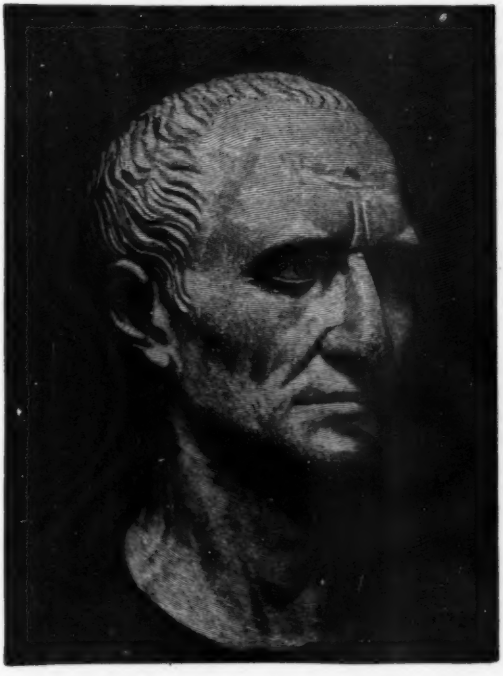
City life in Paris is well drawn, even though it is revolting; but no writer has ever made it anything else, from Balzac down through the whole list. There are temperaments that enjoy the scenes of



Sacking the City
From Julius Cæsar

congested life in great cities; but the wholesome mind must always shrink from such conditions.

"David Grieve" is a far stronger work than "Robert Ellsmere," inasmuch as the latter simply drew the evolution of the one side of its principal character—the religious—while "David Grieve" is the delineation of an entire life.



Julius Cæsar, from the Marble Bust in British Museum

LIFE OF JULIUS CÆSAR.—One of the most interesting of the series, called "The Heroes of the Nations," now in course of publication by the Putnams, is the "Life of Julius Cæsar." The author is Mr. W. Warde Fowler of Oxford, England, and his admirable judgment and analytic mind are proved by his clear and thoughtful delineation of the character of this one of the world's great statesmen. Too many historians, in analyzing the reign of Cæsar and the growth of the Roman Empire, have simply chronicled events and results, making Cæsar the central figure of the wonderful drama, and yet never touching upon the essential philosophy of his preeminence, which lay in his superb statesmanship. In the history of the world, we find records of many men of superior will-power and determination, of wonderful genius, of great magnetic power over the inferior masses, of Machiavellian cunning, of brute force, or of mystic influence, but how few in all that luminous galaxy have been masters of legitimate statecraft; how few illustrious names have withstood the tarnishing and sifting processes of the centuries! The political machine and the political headlight have never commanded but temporary remembrance or ascendency; but the statesman is a hero for all time.

In this admirable, though condensed, work on the life and times of Julius Cæsar, there is much of fascinating interest aside from the development of the statesman's character, and this interest is largely supplemented by the fine illustrations, of which two examples are here given. Not the least important feature of the cuts is the presentation of most of the leading portraits and busts of Julius Cæsar extant, the handsomest among these being the marble bust in the British Museum, and one of the most unique being that on a gem in the British Museum. It is one of the most entertaining and comprehensive lives of Julius Cæsar ever written. The publication of such series makes the debt of gratitude to the Messrs. Putnam a large one.

THE STORY OF NEW MEXICO.—To all Americans descended from good old New England stock, or born and nurtured in the plain, practical commercial center of the present time, there is a strange fascination in the wild, romantic, highly colored story of the Indian, Mexican and Spanish races, and their rise and fall and occupancy on this continent. From the time of the

publication of Prescott's "Conquest of Peru" and "Conquest of Mexico," writers and readers and explorers have gone mad over each successive discovery of traces of a prehistoric people.

Professor Ladd, in his latest contribution to the history of New Mexico, gives us a most thrilling picture of Indian and Spanish life.

Here in our midst is a stretch of country originally occupied by the Mound Builders, or people of similar origin, whose fallen walls and picturesque ruins still testify to the activities of a population of many thousands at a time when the knights of the Middle Ages were carrying on crusades to the Holy Land.

Numerous tools, ornaments and utensils indicate the state of civilization of these people. Following these were the different tribes of Indians who swarmed into the country, largely from the Northwest. Among these were the Moqui and Pueblo (including the Zuñis) tribes, the Navajos and Apaches.

They were the possessors of the land when the Spaniards, tempted thither by greed and wild dreams of discovering unlimited riches in the new Western world recently opened to them, were lured to explore and conquer the vast unknown regions of the West. The achievements of Pizarro and Cortez had aroused their ambition to the highest pitch, and noble and peasant alike burned to invade the new country. Religious zeal was also at white heat, and prompted monk and friar to journey wherever they could do missionary work. There is nowhere to be found more heroic self-sacrifice and faithful devotion at all risks to what they considered duty, than these early Spanish missionaries showed in their work of proselyting the Indians of New Mexico and the country round, and the story of their bravery and sufferings thrills the most indifferent.

The conquest and conversion of the natives were, however, matters of great difficulty. The Indians held out against Spanish rule and the Christian religion with about equal hatred of both, and the history of those times is full of wars and tragedy and heroic suffering. Spain conquered in the end, and for a century New Mexico was one of its colonies, finally becoming a part of the Mexican Confederation, which lasted from 1821 to 1846. The war of our country with Mexico followed, and the conquest of New Mexico by the United States gave this rich territory into our possession.

A long series of Indian wars succeeded, the United States Government expending about $30,000,000 in the subjugation of the Indians. The campaigns against the Apaches and Navajos were cruel and bloody, and reflect little credit on the policy of the country. It was in these campaigns that Kit Carson, among many other gallant officers, distinguished himself.

It is pleasant to know that during these latter years, religious and educational institutions have flourished in this much-conquered territory, and that its rich mining and agricultural resources are being rapidly developed. Here is a grand field for intelligent immigrants, and the future of New Mexico largely depends upon their colonization.

Prof. Ladd has carefully elaborated his "Story" from accurate data as well as from material gathered during a ten years' residence at Santa Fé and extensive travel throughout the country. His book will be read not only for its historic value, however, but for the vivid pictures it presents of strange and remote civilization, of splendid savagery, and of gallant courage, such as always thrills the heart and quickens the pulses.

THE LADY OF FORT ST. JOHN.—What Jane Austen has done for New England history in her charming series, of which "Standish of Standish" is perhaps the strongest, Mary Hartwell Catherwood has done for the Canadian-French history. The Romance of "Dollard" probably made more of an impression on the public mind than any other historical novel she has written, yet her latest volume, "The Lady of Fort St. John," is full of dramatic incident, vivid imagery, local color and sturdy romance. The scene is laid in New Brunswick, and the period embraces a part of the seventeenth century. Perhaps the climax of the novel hinges on the storming of the Fort and the surrender of The Lady; but a piece of character drawing quite as strong

in its way is that of the aristocratic old woman, who is "second leading lady," as the stage folk would say.

A System of Practical and Scientific Physiognomy.—From time immemorial, more or less importance has been attached to the development of the head and of the facial lineaments as an indication of certain characteristics; but at best, the whole subject has been treated first as a black art, then as a legitimate art; and so mixed has it been with all forms of mysticism—astrological, phrenological, theological and spiritualistic—that scientists have never given the matter much attention, at least under the appellation of physiognomy. Larator was the first writer to make the effort to dignify it as a science. This was as long ago as 1775. Sir Charles Bell, Spencer, Darwin and others have given physiognomy much careful study since; but it has been the mission of an American—and a woman, too—to place in the hands of the public a well formulated and practical text-book on the science of physiognomy, based on the universal laws of form, as expressed by the configuration of the face, the features, the body, the limbs, etc., and it is in perfect accord with the latest discoveries in physiology, anatomy, embryology, evolution of organic structure and the cognate sciences.

This work is the result of thirty-five years of persistent observation and research, hand in hand with the most advanced scientists of the period, who have been quite as interested in the ultimate result as has been the author herself, Mrs. Mary Olmstead Stanton, of California.

The two volumes, of 600 pages each, are thoroughly indexed, and contain a glossary and complete bibliography. Nearly 400 fine engravings illustrate the work; and in this gallery of portraits, one may find almost every familiar face of the time that has won name and fame for superior development in art, science, business, etc. The medical journals of the country have given the work particular attention, for it seems to be of wonderful utility in medical practice. Mrs. Stanton is a woman of medium height and most attractive nature, great hospitality, broad sympathies, sterling principle, full of enthusiasm, progressive and altogether charming. Her husband, Andrew P. Stanton, is the genial business manager of the San Francisco *Argonaut*, and he takes the liveliest interest in his wife's success.

Mrs. Stanton is an honored member of the Pacific Coast Woman's Press Association, and was its Treasurer for one term, until she took up her residence at her country place, overlooking Monterey Bay.

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1. "The History of David Grieve, by Mrs. Humphrey Ward. McMillan & Co., London. Price, $1.00.

2. "Julius Cæsar, and the Organization of the Roman Empire," by W. Warde Fowler, M. A. Illustrated. G. P. Putnam's Sons, N. Y. Price, in cloth, $1.50.

3. "The Story of New Mexico," by Horatio O. Ladd, A. M. Illustrated. D. Lothorp Co., Boston. Price, $1.50.

4. "The Lady of Fort St. John," by Mary Hartwell Catherwood. Houghton, Mifflin & Co. Boston. Price, $1.25.

5. "A System of Practical and Scientific Physiognomy, by Mary Olmstead Stanton. F. A. Davis, Philadelphia and London. Price in cloth, $9.00, two volumes.

BOOKS RECEIVED

"These Pretty St. George Girls." A society novel. T. B. Peterson & Bros., Phila.

"The Heiress," by Mrs. Ann S. Stevens. T. B. Peterson & Bros., Phila.

"An Ante-Mortem Statement," by E. W. Howe. Globe Publishing Co., Atchison, Kas. Cloth, $1.00.

"The Days of '49," by Dr. Anna M. Sawtelle, San Francisco, 1892.

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